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Manager Criticizes Structure, Operations of German Large Research Centers

92WS0820A Stuttgart BILD DER WISSENSCHAFT in German Sep 92 pp 112-113

[Article by Wolfgang Hess: "Time to Trim Down"]

[Text]

Research & Management

Dr. Jurgen Blum is the vice-chairman of the German Aerospace Research Institute (DLR) in Cologne (annual budget: about 700 million German marks [DM]). His responsibilities at the DLR include the sectors of personnel, finances, and organization.

The large research centers are incorrectly structured in a central area. Our employees sometimes have working conditions that are too good, complains Dr. Jurgen Blum, research manager of the DLR. He advocates providing a clearer differentiation between excellent and just average researchers in the future.

[Bild der wissenschaft] Large research centers do not enjoy a good reputation among either university professors or managers. Why is that, Dr. Blum?

[Blum] The word "large" means "spending a lot of money" for many people. And perhaps the large research centers are not always successful in clearly defining their goals. Besides, large-scale research work competes with the universities for the funds of the Ministry of Research that are becoming more and more scarce.

[Bild der wissenschaft] It becomes immediately obvious that large expenditures for research are necessary for institutes such as DESY, which operates extensive storage rings, or the IPP, which is working on the task of the century, the fusion reactor. However, why must the DLR work on, for example, solar energy projects that could just as well be done at universities and Fraunhofer institutes?

[Blum] The DLR has three research thrusts. These are air travel, space travel, and energy technology. Each focal point is designed for the long term, requires great expenditure, is interdisciplinary and must, for this reason, be dovetailed on a program basis. This entails a large risk to success.

[Bild der wissenschaft] But this still does not clarify what advantage energy research has at the DLR over that done at universities.

[Blum] I think that, in the meantime, there are many examples of a successful division of work between the universities and the DLR that no one wishes to eliminate. For example, our energy researchers in Stuttgart have formed a joint research venture with the leading solar energy researcher from the University of Stuttgart, Prof. Bloss, and the Fraunhofer Institute. This venture has been so successful that even the Hahn-Meitner Institute of Berlin and the Juelich Research Center are participating.

[Bild der wissenschaft] Precisely the facility in Juelich was founded to advance the use of nuclear energy. It is no wonder that many people doubt that good research in disciplines having nothing to do with nuclear energy can now be done there. Is the nuclear physicist of yesterday really a brilliant researcher on damage done to forests?

[Blum] Of course, there are reasons to assume that these facilities have become immortal, even if they have fulfilled their original task. My personal position is that we must examine how large research centers not only become larger, but also how they can become considerably smaller. This is one ability ...

[Bild der wissenschaft] ... that is not present!

[Blum] Indeed, there are considerable difficulties in the conversion. For this reason, at the DLR we are constantly increasing the number of time-limited contracts. For scientists, we are aiming for a ratio of 50:50 for time-limited contracts to unlimited ones.

[Bild der wissenschaft] And this would make you stand out against the other large research centers?

[Blum] Yes. On average, the ratio of time-limited contracts to unlimited ones is 20:80 today.

[Bild der wissenschaft] To achieve the ratio you want, you can only offer temporary contracts to young researchers. Over the long term, this will develop a poor age distribution.

[Blum] Old does not stand for bad, nor young for good. To a much greater extent, this involves a balanced age structure. The problem is elsewhere. It is a question of the mentality. If older employees bring an entrepreneurial mentality with them, age may even be an asset. If, however, they develop a civil-servant mentality, we have problems with that.

[Bild der wissenschaft] Precisely you, Dr. Blum, complain that the mentality of civil service is too pronounced in the large research centers.

[Blum] Large research is incorrectly structured in one important point. It is organized under private law but operated under public law by the financial backers. This is a contradiction and automatically results in a civil-servant mentality. We must improve our structures, put into place incentives for better workers, and clearly differentiate between employees who are good and those who are not as good. Our employees have working conditions that are good to too good.

[Bild der wissenschaft] How are we to understand that?

[Blum] In my opinion, for example, the working-hours conditions that are cast in concrete in the DLR are too liberal. I have been negotiating for a long time over this with the employees' councils. However, my proposals for

a need-based regulation of the working hours was struck down by the arbitration board. While there are a number of researchers at the DLR who work to the point of self-sacrifice, the structure is just not right when viewed as a whole. The current board would not sign the working-hours agreement of today any more.

I am saying this so clearly because it concerns jobs. Over 1,000 jobs are financed using third-party funds. If we were to lose our international competitiveness, say, because of a working-hours regulation that was too generous, this type of financing would go elsewhere and we would not be able to avoid a drastic reduction in personnel.

[Bild der wissenschaft] How powerful is the board of a large research center?

[Blum] Under no circumstances as powerful as those in industry. I would wish for a few more alternatives to be better protected against the direct actions of the state. One example is that we wanted to provide one institute with cooperative management. All committees of the DLR agreed. However, we also needed the approval of the Minister of Finance in Bonn. He has refused his approval although his representative in the supervisory committee had agreed. In my opinion, the federal government must, for economic reasons, move even more toward placing large research centers in the hands of those whose function it is from the private-law organization. Points of view such as legality and formality still dominate, unfortunately. The demand for economy is not yet supported by the state to the necessary degree. That there is more than a grain of truth in my thesis you can see alone from the fact that there is a chair for scientific and technical law in Bonn but not one for scientific and technical management.

[Bild der wissenschaft] In one lecture at the Management College in Speyer, you complained that the large research centers, although organized on a private-law basis, could not go bankrupt.

[Blum] I really do regret the inability to declare bankruptcy. The state and the politicians providing the finances do not want to the hear the noise generated by terminations. This has been recognized by several employees and had a corresponding effect on the mentality.

[Bild der wissenschaft] Thus, there is no willingness to produce?

[Blum] We see that in many employees. Note well, however, we have many employees who distinguish themselves by a very great willingness to produce. For this reason, we also need economic incentives that reward this commitment. The good ones must be better rewarded than those who are not as good.

[Bild der wissenschaft] How do you want to implement that?

[Blum] Through the organizational structure. We are not a university with a loose organizational structure in which much occurs only on a voluntary basis. The large research centers are run by a board, thus hierarchically. This board must also be responsible for seeing that the goals are achieved with a high degree of efficiency.

In the DLR , we have developed a system of guidance for this reason. In this system, we make exact schedules showing where we want to go and with what funds in a specific time. Deviations from the plan are identified, the causes determined and then corrected.

[Bild der wissenschaft] What is heading toward the researchers there?

[Blum] If the researcher is the director of an institute, he needs to agree with the program director what he can do in the next five years within the specified total program. Then, a schedule is drawn up and later checked whether the given stations or milestones have also been achieved.

[Bild der wissenschaft] Scientific research is also distinguished in that it recognizes that you cannot reach a goal at all under the given premises. This result can be a very valuable result scientifically but not economically.

[Blum] You cannot set the schedules and the financial frameworks too precisely. Second, the milestone method causes one to rethink the project again and again and then to terminate it at the right time.

[Bild der wissenschaft] Has that already happened at the DLR?

[Blum] In Stuttgart, we have closed the Tribology Department. While it did exceptional scientific work, the results of this work were not able to generate any sort of third-party financing. We did not make the decision overnight. Rather, we told the scientists one year in advance so that they could adjust to the fact.

We have also closed the Deep Submergence Technology Department in Cologne and that will not be the last. We will stop one or another large apparatus.

[Bild der wissenschaft] We would like to hear more details.

[Blum] Of course, but at the right time ...

France: Research Minister Curien Says Maastricht Will Benefit S&T

92WS0834A Paris LE MONDE in French
18 Sep 92 p 10

[Excerpts from an article by French research and space minister Hubert Curien: "The Europe of Researchers"]

[Excerpt] [Passages omitted] All this is well and good, but what does Maastricht have to do with it? The answer is that the European Community is indeed at the center of what we do, and I scarcely know any good European laboratories that are not involved in one or another of its programs. True, the EC's science and technology

research budget is still relatively modest—ECU2.5 billion a year—next to the 100 billion spent in all of the 12. But the money acts as a catalyst, triggering reactions, getting cooperative ventures underway, and sparking exchanges.

At first the EC confined its science and technology initiatives to energy. It was Etienne Davignon who set up new programs in 1970, programs which focused first on electronics and information science. ESPRIT changed the attitude of many researchers and engineers. Their address books took on a different look: Entries that had been mainly American became more European. The Single European Act in 1987 officially accepted research and technology development in fields other than energy. A multiyear skeleton program now regulates these projects. The third program has been adopted for the 1990-1994 period.

And what will the Maastricht Treaty do for us? In general terms, it shores up Europe, which still needs fortifiers. All those who have enthusiastically but patiently striven to build it know this. But specifically, the treaty introduces four innovations with respect to science and technology. It affirms the role of research as the foundation and support of decisions that must be made, not only to improve the competitiveness of Europe's industry, but to conduct modern environmental, agricultural, and educational policies.

The research and development skeleton program will embrace all the research projects carried out by the Community. This will give us better insight into the sector as a whole.

Europe's Council of Ministers and Parliament will share decision-making responsibilities for the skeleton program. This way elected European officials will be directly involved in the planning procedure.

These changes make the process more democratic. But they do not make it more complicated, for the procedures for implementing specific initiatives in the program have been made less onerous.

Some people may think these changes modest. But they are far from trivial for us scientists, for Maastricht makes science, which was left out of the Treaty of Rome, one of the cornerstones of EC policy. And we researchers, who are fortunate enough to travel the world, know from experience that anything—like the Maastricht Treaty—that strengthens Europe also allows us to be more confidently French.

France: D2-MAC Termed Non-Competitive With Digital Television

92WS0834B Paris LE MONDE in French 24 Sep 92 p 20

[Article by Michel Colonna D'Istria: "Canal Plus Wants to Switch to Digital Television Quickly"]

[Text] Canal Plus's CEO Andre Rousselet testified before the Parliamentary Commission on the media on Tuesday, 22 September. Mr. Rousselet began by putting on his lawyer's hat. He defended his station, denied that it enjoyed so-called privileges, and explained that its monopoly was de facto, not legal. According to Mr. Rousselet, Canal Plus's dominance is due to the fact that it is the only station in its niche and "has been tactless enough not to encourage the competition." Then he took the prosecuter's role, [attacking] Europe's policy on high-definition television and the manufacturers who support it. As far as Mr. Rousselet is concerned, "the D2-MAC is dead in the short term."

Thus is Andre Rousselet proclaiming aloud what his positions have implied for months. The man who admits to having "believed in D2-MAC for a long time," who has just signed an agreement (see LE MONDE, 8 September) to broadcast some of his channels using the European standard, barely admits that we must "let [D2-MAC] have its last few moments so that it can carry the 16/9." Everyone recognizes that the 16/9 big screen is the format of the future, and only D2-MAC can serve it right now. Aside from that, warns Mr. Rousselet, "the future belongs to the all-digital [standard]" that the Americans are actively preparing. "I am not declaring a revolt, but I can see that the more we hang ourselves with the D2-MAC and the HD-MAC, the more foreigners will be able to gain ground in our country, and I find that sad."

Consequently, Mr. Rousselet is calling for a partnership with the Americans. The CEO of Canal Plus repeated his indictment of Europe's policy that evening before the Parliamentary Office to Assess Science and Technology Choices, throwing in a few digs at manufacturers while he was at it.

Before Mr. Rousselet spoke, the head of EUREKA's high-definition television project, Mr. Bogels, outlined his convictions. Mr. Bogels believes that each product will come in its own time; that fully-digital television exists only in laboratories and will be slow to emerge from them; and that Europe's step-by-step strategy puts us ahead of the whole world in both production and reception equipment for the 16/9. The project head stressed that the HD-MAC standard is largely digital, and that Europe is thus not lagging at all in digital technologies. Finally, Mr. Bogels said that HD-MAC could transmit several programs of current broadcast quality, in addition to high-quality pictures. His comment anticipates one of the arguments—which is based on the number of programs broadcast—of those who advocate an alliance with the Americans.

France: Private Laboratories Aid Small, Medium Enterprises

92WS0838A Paris INDUSTRIES ET TECHNIQUES in French 11 Sep 92 p 22

[Article by Andre Larane: "Large Enterprises' Researchers Lending Ear to PMI's—Birth of Network for Technical Support of Innovation"]

[Text] *If faced with an insoluble technical problem, one can always enlist the aid of the best French laboratories, including private ones. In 1991, Regional Centers for Technical Support of Innovation processed 2,000 requests for assistance.*

The Regional Centers for Technical Support of Innovation (CREATI), numbering 16 in all, have formed an association under Law 1901 to further their efforts and facilitate exchanges of specialized knowledge. They were installed by large enterprises. This is what differentiates them from the other structures that have been instituted—in this case, by the government—to aid innovation and the PMIs [Small and Medium-Sized Industries]. Their aims, in both cases, are comparable: Provide technological support to enterprises. "Our ultimate goal is to weave a high-performance industrial fabric around us," says Hubert Chavanel, vice president of the CREATI network and manager of one of its centers (Rhone-Poulenc Developpement].

These centers nevertheless differ widely among themselves as regards available means. They are differentiated also by their initial objectives: Support of industrial growth by means of financial aid (encouraging the creation of PMIs by the staff of the enterprise); industrialization of processes and facilitation of industrial transfers; placement of test know-how and facilities at the service of others; and facilitating the transfer of expertise.

In 1991, the CREATIs contacted more than 1,000 PMIs, and processed some 2,000 cases of assistance, two-thirds in the form of advice, and the remainder in services. Billings totaled around 25 million French francs [Fr]. To respond to the PMIs, the heads of CREATIs have correspondents in their establishments. "We receive requests that relate to our basic specializations and require expertise that is too close to the cutting edge for the para-governmental technical centers," says Hubert Chavanel. Over a period of 18 months, for example, Rhone-Poulenc Developpement has handled some 30 substantive projects, like that of Moneytec, a Lyon-based beverage-dispensing-machine manufacturing company, which Rhone-Poulenc Developpement counseled on the way to give its cups an appropriate shape.

Rhone-Poulenc Developpement, according to its manager, operates as the interface between the chemicals group and the PMIs on a non-exclusive basis... "with privileged financial aid for those that stem from Rhone-Alpes," he says. The group conducts training classes. Given the worldwide scope of its operations, it provides support for export activities. Among other things, its CREATI also undertakes standardization activities, and participates, of course, in the technological marketing network that coalesces all the regional players. These include technical centers, ANVAR [National Agency for the Development and Commercialization of Research], etc.

Saint-Gobain Developpement is a GIE [economic interest group] that concerns itself with supporting the setting up of ventures. It was formed 12 years ago to aid in the conversion of a number of the company's manufacturing plants. Since then, it has participated in the creation of 15,000 jobs in 600 enterprises, through financial assistance at advantageous rates, and intellectual services. "Today, we also develop industrial and commercial aids for our neighbors, upon request. These aids are provided on a small scale and without charge," says Gilbert Frizon, the GIE's managing director of industrial support.

The Elf-Aquitaine petroleum company envisaged things on a large scale. It created two technical centers: Cetra, at Lacq (Pyrenees-Atlantiques) in 1980, and Cetralp, at Saint-Symphorien-d'Ozon (Rhone) in 1985. They are providing the PMIs with intellectual services in growing numbers, based on the know-how of the group's 14 laboratories and 4,000 researchers. In 12 years, they have carried out 600 study projects and research contracts, for a total of Fr35 million. For example: The Colladello company, at Bourg-de-Peage, had invented a ribbed wood paneling, whose commercial success was being hampered by the required drying and seasoning time. After a series of tests on scale models of the paneling, the Cetra-Cetralp group defined a quick-drying glue that enabled Colladello to avoid investing in a new drying oven.

Belgian R&D Funding Decreasing, Considered Inefficient

93BR0012 Antwerp GAZET VAN ANTWERPEN in Dutch 7 Oct 92 p 2

[Text] This country's scientific research policy is in a bad state, according to a statement made yesterday (Tuesday, 6 October) by Paul De Grauwe, a professor at Leuven University and PVV [Liberal party] senator. The Flemish Liberals have, however, a solution to this problem. The jurisdiction between the federal government and the Flemish administration must be clearly divided and the scientific research, which is financed by the government, must concentrate on basic research.

According to De Grauwe, there are two faults in the scientific research program. In the first place, the government is continually reducing the budget for scientific research. In 1970, the participation by the private sector and the government in scientific research was almost equal. At the moment the government's share in scientific research has dropped back to around 20 percent. Senator De Grauwe has also observed a reduction in government funding in other countries, but nowhere has it been so spectacular as in Belgium. Second, the resources for undertaking scientific research are not always being used efficiently. It is the duty of the government to support basic research. In practice, too many funds are still directed toward industry for technology projects. Financial assistance should therefore be concentrated in the universities. At present, there are too many institutions and "territories" in the system which annually receive a hefty dollop of money. De Grauwe mentioned among others the Institute for Scientific

Research in Industry & Agriculture (IWONL), which directs millions to projects undertaken by the Farmers' Association.

The fact that funds for scientific research are not always used efficiently is often due to the fragmentation of the budget [over different authorities]. De Grauwe would like to see as much central government involvement as possible in scientific policy. In the Flemish administration, the matter should be entrusted to the Minister for Education; a Federal Minister of State should also be responsible for scientific policy which must remain federal.

The various governments allocate 66 billion Belgian francs [BFr] to scientific research. Of this, BFr21 billion comes from the federal government; BFr23 billion, from the Flemish administration. If wages and salaries are subtracted, then the federal government allocates BFr16 billion to scientific research and the Flemish administration, BFr10 billion.

DASA's Schrempp on Industrial Policy for Aerospace Industry

93P60013A Duesseldorf HANDELSBLATT in German 5 Oct 92 p 9

[Text] The task of companies in a highly developed industrialized country without many natural resources is to strengthen economic power and innovation so that global competitiveness can be assured in the technologically challenging markets.

For this purpose, companies must use long-term strategies to adapt their structures to the conditions of competition, to adjust to technological progress and its subsequent development, to keep their production technology constantly up-to-date and to make decisions on cooperation at the European and worldwide levels so as to be present in all important world markets during this time of globalization.

It is the state's task to create the political overall conditions to allow for fair competition. The contents of such political overall conditions are the setting of long-term political goals which can offer the companies a reliable framework for their strategic orientation, the efforts for social acceptance of these goals (example: the reduction of hostility to technology), and the creation of the legal, administrative and fiscal overall conditions for fair competition.

Subsidies for structural maintenance of obsolete branches of industry must be stopped. Instead, one must selectively establish the overall conditions which are decisive for the competitiveness of future-looking companies. When Germany provides annual subsidies in the amount of at least 10 billion German marks [DM] to maintain the coal and steel industry, but there are violent media battles over a space budget of about DM1.8 billion, then that does not show a very strong orientation toward the future.

As a key technological industry, the aerospace industry has decisive influence on the competitiveness of the highly industrialized countries of Europe. This branch has top technologies such as microelectronics, material technology, microsystem technology, sensor technology, information processing and the relevant know-how in the areas of manufacturing and integration and therefore it is the stimulant and pacemaker for technological progress in many other areas.

Because of the high productive depth, the challenging system management tasks in the aerospace industry provide the prerequisite for maintaining the industrial base of Europe. Other countries have long recognized this connection. Thus, the Americans regard their aerospace industry as a strategic industry and are clearly pursuing on a priority basis the political goal of worldwide leadership. Thus far, the EC subsidy programs have not been able to compensate for the cutbacks in the aerospace technology programs on the national level.

At present Europe, especially the German aerospace industry, continues to be in an unfavorable position vis-a-vis its main competitors in the United States. Because of its strategic importance, the American aerospace industry has grown in symbiosis with the state, which supports it from three important sources of finance: the Department of Defense, NASA, and the tax system.

Research results have been good by international standards in almost all fields of high technology in Germany and Europe. But a problem exists in converting them into marketable products and processes. The reduction of this deficit is the most important task facing the promotion of innovation.

For this reason, the following steps are necessary:

- the continuation of effective basic research with, on the one hand, close links between state and industry and on the other hand a clear delineation of roles between state research and industry;
- the strengthening of application-oriented promotion of key technologies and the more consistent setting of priorities in the existing programs;
- better coordination of national and European research policies and the concentration of the European subsidy programs on strategic goals which will be jointly defined (and not equal geographic distribution or quota arrangements).

The rise in R&D costs of big aerospace programs is increasingly surpassing the financial and personnel capacities of a single company, often even those of a single country. Therefore, aerospace firms must constantly engage in strategic alliances to lower risks. Industry must have a free choice when choosing suitable partners. Political influence on the selection of partners runs the risk of producing organizations which cannot stand up to the market.

The globalization of industrial markets cannot be stopped. Here too the aerospace industry is a forerunner of a general development. Therefore the necessity arises for industry on the one hand, with the exception of a few niches, to be able to act as a global competitor on the market with the necessary capabilities, capacities and market access, and on the other hand there is the obligation of handling these problems through industrial policy. This is particularly true for the microelectronic, automobile, and aerospace industries.

Therefore Deutsche Aerospace advocates that one begin a European comprehensive strategy for the areas of liberalizing the European market, building up the European infrastructure network (communications, transportation, monitoring, and so on), and promoting education, and that the EC countries, along with industry and the managers, would indeed commit themselves to such a strategy.

SPD Criticizes Research Policy in Eastern Germany

93P60017A Duesseldorf HANDELSBLATT in German 9-10 Oct 92 p 9

[Text] Eastern German research is at a considerable disadvantage financially as compared with the West, according to European Parliament member Edelbert Richter (SPD).

Last year the federal government spent DM82 per capita in this sector in the new laender, but DM127 per capita in the old laender, Richter stated on Thursday in Erfurt during an SPD conference on the future of industrial and university research in eastern Germany.

Richter, a member of the SPD Educational Commission, further criticized that the amount of money recommended by the Science Council for the university renewal program, namely DM6.5 billion marks, was reduced to practically a fourth of this amount. Meanwhile, the amount has been raised to DM2.4 billion, but that still does not meet the needs by a long shot, Richter said.

The discrimination against eastern German research is not only "unjust and unconstitutional" but from an economic point of view it is a "waste of human resources." According to the calculations of the Federal Ministry of Science and Technology, each newly created job in industrial research costs DM20,000. This is far more economical than paying for unemployment, Richter said.

According to Eckehard Foertsch of the Federal Ministry of Research, the 1993 budget of the ministry provides DM1.75 billion for eastern Germany, which is DM150 million more than in this year. The focal point is seen as the promotion of non-university research to improve the employment situation and infrastructure in eastern Germany, Foertsch said.

Eastern German scientists can carry on the "outstanding accomplishments" of the past years in areas such as optics, metallurgy and process engineering. Up to now, 60 non-university research organizations have been created, including 21 Fraunhofer institutes and two Max Planck institutes, Foertsch said. Up to 10 Max Planck institutes are to be established in eastern Germany.

German Research Ministry Announces Molecular Bioinformatics Program

93MI0022 Bonn TECHNOLOGIE-NACHRICHTEN PROGRAMM-INFORMATIONEN in German 10 Sep 92 pp 1-2, 9-14

[German Federal Government Announcement of Molecular Bioinformatics Funding Program]

[Excerpts]

Table of Contents:

1. Funding Framework and Objectives

This Molecular Bioinformatics Funding Program forms part of the "Strategy for the Future: Information Technology," and by concentrating on the highly innovatory application sector of molecular biology is contributing to the development of a new interdisciplinary field of research.

By promoting the development of the requisite mathematical and computer tools, the funding program supports work on solving priority problems that fall within the scope of the "Biotechnology 2000" program.

An interdisciplinary team of researchers from science and industry has worked out the technical basis of the program, and the Association for Mathematics and Data Processing (GMD) and the Association for Biotechnology Research (GBF) are coordinating the team's work.

The area designated for funding includes, mainly, the development of new methods of storing, handling, and processing the information obtained from genome analysis and thus represents a major prerequisite for the exploitation of data obtained in medicine, pharmacology, chemistry, biology, and biotechnology. The program will thus provide the preliminary research for developing the technology of the 21st century in these sectors.

The adoption of an interdisciplinary approach bringing together the research capabilities from both the life sciences and computer science and mathematics is expected to bring a great leap forward for the disciplines involved, obtained by combining their knowledge and different methodological approaches. Synergies of this type are also playing an increasingly important part in other overlapping areas of science, and represent one of the major challenges for research funding.

The acquisition of new knowledge in molecular biology, which will be speeded up by the use of computers, must be accompanied by ethical, social, and political considerations. These issues will be addressed under, for instance, the Technology Impact Assessment program supported by the BMFT [Federal Ministry of Research and Technology]. [passage omitted]

3. Funding Priorities

R&D projects on molecular bioinformatics and computer science research for biological purposes in the following sectors will be eligible for funding:

3.1 Data Base Developments

The following aspects in particular deserve funding with a view to developing a comprehensive information system:

3.1.1 Integration of Heterogeneous Biological Data Base

- Development of a strategy for integrating the various partial data base and development of an integrated system; thus composed;
- Definition of message standards for the exchange of objects and operations between data base and between software systems, to be based on standards such as RDA [Remote Database Access], and the development of reference architectures for a network of interoperable data base systems and their application systems;
- Design and development of prototype software of this type for intelligent user interfaces that make it possible to retrieve information from heterogeneous and geographically distributed data bases, using both suitable forms of graphic display and knowledge-based approaches;
- Exploitation of new data base concepts, e.g., object-oriented and deductive approaches, to make it much easier to set up complex data bases using suitable modeling procedures, and integration of new multimedia technologies including the use and integration of modern hardware;
- Development of additional data bases and interfaces, taking account of international cooperation and the overall design of biology data bases.
- Development of the appropriate programs by data base hosts for the expected gene sequencing programs, both for data collection purposes and in order to give scientists rapid access to current data and automatic updates via an electronic network.

3.1.2 Search Algorithms for Data Bases

The large volume of data and the very different ways in which data and data bases are structured, plus the complex requirement profile of users of this data make it necessary to develop specific strategies, methods, and algorithms for selecting and developing new structures in the data base.

Aspects associated with the following tasks must be studied as a matter of priority:

- multiple string comparison;
- selection and classification of suboptimal alignments;
- assembly of a string from partial strings with additional knowledge (fragment assembly);
- pattern recognition using the complete data set with complex comparison criteria (pattern matching).

3.2 New Algorithms for Modeling Biomolecular Structural and Functional Properties

The analysis, modeling, prediction, and optimization of molecular structures by computer is one of the "challenge classes" facing high-performance scientific computing. Consequently, new approaches are required, both for scaling, i.e., tailoring the problem to the computer, and for developing high-performance computers with massive capacities. To this end, approaches based on algorithmic and innovative neural concepts must be developed and integrated.

3.2.1 Optimization Strategies for Predicting and Describing Molecular Structures

The three-dimensional structure of only about 150 different proteins are known to date, but more than 25,000 sequences of gene products have already been established by modern sequencing techniques. This figure will increase exponentially in the near future as a result of the genome analysis projects. Improved knowledge about the connection between three-dimensional structure and amino acid sequence in protein would therefore vastly increase the amount of information already available. An understanding of the three-dimensional structure is an important prerequisite both for the targeted development of biocatalysts, which have to be developed on a particular receptor, and for the specific development of proteins with application-related properties.

To this end, it is important to continue developing mathematical methods for protein structure analysis or for protein structure determination by NMR [nuclear magnetic resonance] spectroscopy, and structure prediction methods. Assessing structural change during modification, and forecasting structure on the basis of the structural data of related molecules is a central task.

Molecular mechanics requires a substantial improvement in the field of force parameters used to calculate the energy function (torsion parameters, electrostatic energy).

Other priority work includes the development of new optimization strategies (multiparticle problem) and the development of new structure descriptions, the introduction of fuzzy and near-optimal search methods, and the use of neural architectures for determining the optimum in protein structure prediction.

3.2.2 Pattern Recognition Methods for Molecular Surface Description

New methods, e.g., geometric and potential-surface descriptions of molecules in conjunction with graph-theory and topology-based pattern recognition and statistical search algorithms, are needed to improve the definition of potential interactions between molecules and the optimization of the interactions that occur during the docking of two molecules. Moreover, knowledge-based systems for tasks such as analyzing structure-function relationships in biocatalysts need to be extended or developed from scratch.

3.2.3 Protein Sequencing and Folding Prediction Methods

Knowledge about the connection between the sequences and three-dimensional structures of proteins and nucleic acids must be improved by using combinational and statistical techniques, knowledge-based systems, and other artificial intelligence methods to discover folding patterns and certain functionally essential sequence patterns.

Other tasks include adding to the information on proteins and nucleic acids available in structural data bases with regard to redundancy, accuracy, structure description etc., and developing new mathematical/computerized procedures for predicting secondary structures.

3.2.4 Structural/Functional Relationship Derivation Methods

An important field for the development of knowledge-based systems is the analysis of structure-function relationships in biocatalysts. By applying this knowledge to new developments, the potential toxicity or probable undesirable side effects of biocatalysts could be identified in many cases before the production stage.

3.2.5 Formal Language Methods for Describing Cellular Control Processes

In this connection, computer science can provide the means of expression whereby the significance of DNA sequences of regulatory importance can be represented on a computer. A description of cellular control processes, particularly cell differentiation, can be obtained in this way. The available information on gene regulation is combined with formal language methods and substitution systems to describe the processes.

3.3 Graphics, Visual Representation

It is necessary to elaborate new "virtual environments" and completely novel forms of visual representation, particularly the calculation and representation of all the information inherent in a molecular structure the representation of processes involved in molecular dynamics for the molecule designer, and the development of new user interfaces based on Windows standards.

In certain areas, such new visual representation, concepts can be developed and implemented in a computer network. The distribution of data generation, processing, and representation among high-performance computers and graphics super-workstations linked together in a high-performance network, creates possibilities such as the real-time representation of dynamic simulations. The integration of different media and the representational possibilities that they offer in a homogeneous system surface thus takes on enormous significance.

3.4 Use of High-Performance Computers

The extremely stringent requirements associated with a multiple sequence comparison and the simulation of molecular interactions and molecular dynamics make it imperative to use powerful computers with vectorization and parallelization options, and to tailor the software accordingly. Moreover, new algorithm components must

be developed and tested so as to make optimum use of the efficiency of computers with an innovative processor and system architecture and computer networks.

The parallelization of complex simulation and optimization processes in genome and protein research represents a major challenge for algorithm development in computer science, and particularly in numerical mathematics. The main research topic consists in evaluating different parallel architectures of different granularity [koermigkeit], and organizing the data and algorithms accordingly. The use of special components such as associative memories is also important.

4. Implementation

For the purposes of implementing the funding program the measures will be announced in the Federal Gazette. Preference will be given to joint research (particularly within the context of EUREKA) as the basic channel for funding, where possible with the participation of industry. Another requirement will be that the research projects adopt an interdisciplinary approach.

4.1 Research and Development Projects

Research and development project applications (if necessary project outlines in the first instance) for this funding program are to be addressed to: German Aerospace Research Institute (DLR) Information Technology Project Manager Rudower Chaussee 5 D-O-1199 Berlin Tel. 030/6 77 43 79 Fax. 030/67 04 51 84

The applications will be assessed in close consultation with the Biology, Ecology, Energy (BEO) project manager of the KFA [Nuclear Research Association] Juelich.

Basic research that paves the way for practical applications and projects will be eligible for funding if it is in the public interest and forms part of the precompetitive stage.

4.2 Infrastructure

The continued operation of data base (sequences, enzymes, structures, microorganisms) is a prerequisite for research in the overall field of molecular bioinformatics.

Close cooperation between the natural sciences and computer science holds out the prospect of creating a network infrastructure to which not only participants in the project but all interested users should have access.

To this end, it is important to ensure that the teams involve form a close network and that the updated data base contents are transferred.

Another infrastructure measure consists in providing the teams taking part with computing time on high-performance computers and direct access to these computers and the data base.

4.3 Training Aspects

In comparison with the United States, there is an acute shortage in Germany of scientists with an advanced knowledge of both biological and computer sciences, a shortage also felt by industry.

The envisaged cooperation between biologists and computer scientists, and the reciprocal undergraduate and postgraduate training opportunities that it will create, will contribute significantly towards the training of qualified scientists with interdisciplinary knowledge in this key area and thus towards improving competitiveness in the industry.

5. Financial Framework

A sum of about 50 million German marks [DM] has been earmarked to finance the funding program from 1993 to 1997. Of this, DM37.5 million will be allocated to project funding and DM12.5 million to institutional funding for the establishments taking part.

6. Appendix

Three concrete spheres of application for molecular bioinformatics (genome research, biomolecular design, and biocatalyst development) are described in the appendix. These areas will be funded as part of the BMFT's "Biotechnology 2000" research program. It is hoped that the developments achieved under the molecular bioinformatics funding program will meet the modern scientific demands made by biological and biotechnology research on mathematics and computer science, and create openings for biology-related computer science research.

6.1 Genome Research

All over the world, genome research is one of the priorities in the development of modern biotechnology. The schedules set by various international genome research programs indicate that the detailed gene structures of human beings, mice, drosophila (fruitfly), rice, arabidopsis (plants), nematodes (worms), yeast, and E. Coli (bacterium) will have been elucidated within the next 10 to 15 years. A full knowledge of gene sequences will lead to completely new industrial, medical, agricultural, and ecological applications of molecular biotechnology. The enormous potential of this development is already emerging in outline.

The United States puts the cost of the entire project at several million dollars. The National Institute of Health and the Department of Energy will spend about $150 million on genome research in 1992.

The enormous increase expected in genetic sequencing and structural data is reinforcing the already discernible disparity between the quality of the data available and the quality of its interpretation. New data acquisition and management methods must therefore be developed and new approaches to data interpretation found to make the data accessible for meaningful technological

use. At the present stage of development, a large proportion of the raw data initially remains uninterpretable, and hence unavailable for exploitation in research and technology. Molecular bioinformatics can play a key role in overcoming this disparity.

Firstly, the data acquired and the associated knowledge must be structured and collected in data bases. This entails considerable development work, as biological data is very heterogeneous and do not fit into existing data base structures. Existing international cooperation on nucleic acid and protein sequence data bases has already made an important contribution, but a sound long-term financial and institutional basis is still lacking in Europe. Moreover, the individual data bases are not integrated to form an overall scheme, and this is essential for the development of intelligent access and evaluation software.

Secondly, the need for data analysis methods is largely unsatisfied. The discovery of new structural and functional gene product properties requires the systematic analysis and cross-linking of initially heterogeneous data by modern computer science methods and intensive software development.

Thirdly, the exploitation of the data obtained from genome projects for technological purposes will basically depend on the extent to which the development of computer methods makes the information concealed in the raw data accessible to the research and development worker and brings it to the biologist's workstation via rapid, uncomplicated data access and rapid, automatic updating procedures.

6.2 Biomolecular Design

The application potential of the structural and functional properties of biomolecules (particularly proteins) endowed with specific new properties are inestimable. Suffice it to mention bioreactor development, pollutant degradation, new drugs and vaccines, and biosensors or materials with completely new types of properties. Practical work is already under way on developing highly specific, energy-saving reactors and highly selective pharmaceuticals and plant protection agents. Proteins constitute the family of substances best suited to this purpose. Moreover, there are promising signs of the use of proteins or biomolecular complexes as bases for novel sensor, information processing, and nanotechnology developments.

It has become increasingly clear in recent years that, while an exact knowledge of three-dimensional structure is indispensable for endowing proteins with the best new application-relevant properties, this knowledge alone is not sufficient. In view of the huge variety of possible variants (about 10^{300} even in small proteins), the likelihood of finding an "optimum" structure by random mutations is infinitesimal, even if hundreds of thousands of variants were produced and if billions of optimum variants were to exist. Only by systematic planning (biomolecular design) can this type of work be performed effectively and unnecessary animal experiments avoided. This cannot be achieved without interdisciplinary cooperation among scientists working in structural chemistry, crystallography, spectroscopy, biology, physics, mathematics, and computer science.

By founding the "Center for Applied Protein Engineering (CAPE)" (situated at the GBF [Biotechnology Research Association] in Braunschweig), industry and the BMFT played a pioneering role in the Federal Republic in setting up a center for method development and support to industry in applied biomolecular design. Countries such as Great Britain, France, Denmark, Norway, and Canada have since completed this development. The Braunschweig center showed that it was possible, for a comparatively modest outlay, to modify the specificity of an enzyme as desired and with predictable results, to produce new types of drugs of medical interest, and to achieve a considerable increase in the resistance of proteins to detergents or the "laundering activity" of proteases. These successes were achieved by the systematic application of methods ranging from sequencing through structural research, structure prediction, molecular graphics, and molecular mechanics to the simulation of intra- and inter-molecular processes.

In parallel with the application-oriented BMFT funding measures, the DFG [German Research Association] set up a center for the development of proteins with new properties. Here, too, the first results of work focusing more on basic principles have now been obtained. The bioinformatics funding program complements these support measures.

Molecular design, in particular, places a large number of demands on modern computer science and mathematical procedures, as the size of the molecules involved and the complexity of the relevant interactions are forcing unacceptable simplifications in the available computer hardware (computing and graphic display speeds, in spite of the enormous increases in performance achieved in recent years. These simplifications can be overcome only by new algorithms and computing techniques.

The transfer of the principles of multigrid processes, which are so successful in simulating technical processes, to biomolecular design problems is thus conceivable. In the future, performance levels that come closer to meeting the complexity and fidelity to detail requirements while maintaining acceptable computing speeds can be expected on new parallel computer architectures.

6.3 Development of Biocatalysts

Biology and computer science are now assuming a central role in the search for new biocatalysts for pharmaceuticals and plant protection. Instead of the former strategy of synthesizing a large number of substances from scratch and testing them on animals, rational methods are increasingly being used to discover and optimize new key structures. Biocatalyst research is thus predominantly based on a biological strategy whereby endogenous substances (e.g., low-molecular biocatalysts

such as neurotransmitters, hormones, peptides, or proteins), which fulfill highly specific functions in the organism, are converted into analogs with superior properties by the targeted computer-aided variation of their chemical structure.

More specifically, this process can be applied primarily to the objectives of drug development and plant protection research:

- greater biological activity;
- greater specificity of effect;
- lower toxicity but same efficacy;
- absence of a number of undesirable side-effects;
- better pharmacokinetic properties i.e., enhanced bioavailability, organ distribution, metabolic stability and/or slower elimination.

A prerequisite for achieving these objectives, is the availability of methods whereby, once the endogenous substances or the enzymes that metabolize them have been isolated and purified, their three-dimensional structure can be elucidated then modeled using computer graphics. The conformational mobility of low-molecular substances and their bonding sites on protein surfaces must be calculated, modeled and represented. An understanding of the interaction energies between ligand and bonding site and of entropic factors will indicate the affinity and hence the activity of the ligands as agonist and antagonist (in the case of enzymes). Structural comparisons between low-molecular substances that perform a similar, or even different, biological activity make it possible to explain the structural regions that are essential for a particular biological activity.

French Research Minister Explains EUREKA Priorities

93WS0028H Brussels EUREKA NEWS in English Sep 92 pp 4-5

[Interview with Hubert Curien; First three paragraphs are EUREKA NEWS introduction]

[Text] It was in Tampere, the third largest town in Finland, that the Finnish Presidency of EUREKA concluded its term of office by convening the Tenth EUREKA Ministerial Conference on May 21-22.

The outstanding event of this session, chaired by Mr. Kauko Juhantalo, the minister of Trade and Industry of Finland, was undoubtedly the official acceptance of Hungary as the 21st member of the initiative, thus giving tangible form to the open policy that has been pursued by EUREKA for two years in response to the changes in Central and Eastern Europe.

Apart from the now traditional announcement of a new crop of projects (102 this year), the Tampere meeting also focused on ways of improving the effectiveness of EUREKA. Finland has bequeathed to the new French Presidency the broad lines of the "Medium-Term Plan" which will guide the development of EUREKA over the next four years. In this context, France has already presented a 1992-93 action programme based on five priorities. Mr. Hubert Curien, French Minister for Research and Space, explains these choices.

EUREKA News In its programme, the French Presidency makes its first objective the development of new projects of a "strategic" nature which will be more in line with certain industrial challenges that Europe must take up. Does this not mean that we are moving towards a more "managed" conception of EUREKA?

Mr. Hubert Curien Not at all. I must re-emphasise the "bottom-up" nature of EUREKA. This remains the keystone of the Initiative and, during the discussions that we have just had here in Tampere, this was the basic principle to which all Member Countries gave priority. So if the French Presidency is making this theme of strategic projects the core of its action programme, it is not because it intends to call into question the "spontaneity" of proposals from industrialists. The success of EUREKA lies in the very fact that it has triggered off a movement that is reflected in an ever-growing number of projects. What we want to do is to encourage the development of projects in challenging industrial sectors, because Europe must exploit its potential in these fields. These projects have also a symbolic role because they are emblems, or standards, of a technologically ambitious Europe which can mobilise its resources for important goals.

EUREKA News Which strategic fields have been selected?

Curien Four priority fields have been identified. We feel that it is essential to carry on strengthening the strategic initiatives in information and communications technology and in the field of transport. Major projects, such as JESSI and PROMETHEUS already exist, but additional efforts must be made because these are vital sectors for the future of European industry.

But we also want to meet new strategic needs. For instance, we consider that waste processing is not only an environmental but also an economic challenge which fits in well with the objectives of EUREKA, namely a concrete industrial approach to environmental problems.

Another theme that has been selected is that of "The Factory of the Future." This concept simply cannot be boiled down to the blind, systematic introduction of robots in the manufacturing industry. The practical requirements of industrial competitiveness make it essential to rethink production methods in the broadest possible manner, placing the accent on the most valuable asset that we possess: human resources. The factory of the future is a workplace which will incorporate the qualities of tomorrow's workers harmoniously.

EUREKA News The second point in your programme is that of relations between EUREKA and the European Community...

Curien It must be acknowledged that these relations have not always been very clearly defined over the last few years. The synergisms between the EC and EUREKA have been insufficient, which may have led to some misunderstandings. We hope that the principles for fruitful cooperation will be reaffirmed and applied, on both sides, and to this end we would also like the interface mechanisms between the Community and EUREKA to be clearly identified. From this point of view, the statements made at the Tampere Conference by the European Commissioner, Mr. Pandolfi, were very encouraging.

EUREKA News Would you not agree that the central problem is coordination between Community research programmes and the development of certain EUREKA projects?

Curien Yes, especially the question of defining the most appropriate framework for such and such a research activity. In theory, the rules are simple enough: EUREKA is the most appropriate framework since R&D must result in products, whilst projects still involving "precompetitive," rather "top-down" research efforts, fall more within the competence of the Commission of the EC. But there are a lot of intermediate cases: it was in order to deal with these more quickly and more effectively that we wanted clarification.

EUREKA News Does the fact that the third priority of the French Presidency is participation of SMEs in EUREKA mean that these are still viewed as EUREKA's "poor relations"?

Curien That is wrong, and it is important to make that clear. The project statistics at the end of the Finnish Presidency clearly show that SMEs are already very much involved. However, enormous efforts are still required to make more SMEs interested in EUREKA. In this field too, cooperation with the Commission of the EC is of capital importance, which is why the Ministerial Conference was very interested in European Commissioner Pandolfi's announcement of a project aimed at establishing a "venture capital" system geared towards enabling SMEs to embark upon advanced-technology problems.

For our part, we feel that the mechanisms used to involve SMEs in EUREKA and to develop the relations between them are efficient only if they are decentralised. SMEs do not have the same skills as large companies when it comes to approaching governmental or international bodies. Consequently, it is necessary to move more towards them, a task to which the national agencies are well suited to.

We must make sure that the procedures in each country are harmonised as far as possible. Only too often we see projects running up against the fact that the recognition and support mechanisms differ considerably from one country to the next, which impairs their proper development. We must make a major effort to synchronize our procedures.

EUREKA News Now that Hungary has joined EUREKA, you have also announced your intention to actively pursue EUREKA's open policy towards Central and Eastern Europe.

CurienHungary is an exemplary case, because it shows how efforts put in over many years can enable a country to join the circle of advanced industrial countries without any particular difficulties. The admission of a new country to EUREKA is not a sort of reward given to a minister who politely asks you if his country can become a member of the club. Hungary has joined EUREKA because it demonstrated in advance the ability of its industrialists and scientists to work effectively within EUREKA projects.

We want to give other countries this opportunity to "prove themselves" by allowing them to participate in EUREKA projects.

EUREKA News Finally, during its Presidency, France intends to introduce a more systematic procedure for evaluating the spin-offs from EUREKA projects.

Curien This is a point on which many countries hope that progress will be made. A good many projects launched a few years ago have reached or are about to reach the industrialisation and market penetration stage. It is time to take stock of the results that they have achieved: what is their impact on the competitiveness of European industry, what shares of world markets have been won? But in Tampere some participants insisted that this evaluation must also take the effects on society into account; what part have these technological innovations played in improving our environment? It seems to me that this is an important issue.

I would add that this exercise must be European. In actual fact, the basic question is the following: to what extent has cooperation within EUREKA projects made it possible to go beyond a simple juxtaposition of national efforts? This evaluation of completed projects must therefore involve all of us, it must become a means of assessing whether we are indeed attaining the objective that we have set ourselves.

Economic Impact, Problems of Regional Technology Centers Discussed

93WS0031A Paris LE MONDE in French
6 Oct 92 p 43

[Article by Catherine Levi: "The Technopolises"; first three paragraphs are LE MONDE introduction]

[Text] "Technopolises" were born in France in the early seventies, modeled after California's Silicon Valley. These networks of cutting-edge industries, universities,

and research laboratories are now at a turning point in their history. The initial concept of an "intelligent" rural park outside metropolitan hubs is giving way to that of "dynamic urban complexes" as in Montpellier. The object is to infect urban centers with the technopolis "virus" so that they too become intelligent, and to keep the isolated experimental hubs from deteriorating.

This opinion shift was virtually inevitable, as the troubles of the pioneering technology center, Sophia-Antipolis, show. In 1990, that technocenter's own success created serious infrastructure problems for it. At the same time, technology centers are spinning out spider-like webs which embrace entire regions (witness the High-Technologies Corridor in the southeast) and are moving toward internationalization. France is not alone in its craze for technocenters. Indeed, according to the Delegation for Regional Planning and Development (DATAR), there were nearly 180 parks across Europe in 1990. With help from the European program SPRINT, which focuses on innovation and technology transfer, a pilot program for cooperation among the Bari (Italy), Seville (Spain), and Montpellier sites has recently been initiated, giving a distinctive shape to the Europe of regions.

Over the years, then, technocenters have become engines of local economic development. Every French region boasts one. [But] although the economic reality and dynamics of technocenters are undeniable, the concept is not embraced by all those who practice the art [of economy-building]. In any event, the creation of technology centers has not magically erased all the problems of regional economies....

Characteristics

"A technopolis cannot be decreed, it must be earned." Hubert Curien, minister of research and space.

Regional technology centers were spawned under the influence of the famous Silicon Valley, with Sophia-Antipolis (Maritime Alps) and the regions of Meylan, near Grenoble (Isere), and Nancy-Brabois (Meurthe-et-Moselle) pioneering the concept. They have proliferated across the country while becoming more diverse in the economic models and institutional forms they have adopted. There are now 40 technology centers, 10 of which run at full capacity.

A technopolis is always the product of a meeting between cutting-edge industries—which are often involved in the same specialty, such as biotechnologies—universities, research laboratories, and local officials. Whatever the combination, the principle is always the same: To promote communication and exchanges and pool resources (networks), by gathering the different players at one site. The goal, in the words of Pierre Laffitte, the founder of Sophia-Antipolis, is to create "cross-fertilization," which generates growth, technological innovation, and jobs.

The regions build the neccesary infrastructure to support the network, including roads, telecommunications, and general services (hotels, banks, tennis courts, etc.). Technopolis officials handle daily operations, including promoting the center, finding companies, acting as group leaders, and putting together ANVAR [National Agency for the Upgrading of Research] innovation files. The Nancy-Brabois technopolis, for instance, organizes lunch-hour discussions, offers a host of general services, such as a horsemen's club, and has a specialized department for entrepreneurs.

Usefulness

Technocenters seem to offer a win-win situation all around. Companies gain the pleasant "high-tech" environment that is conducive to their development and that has made Sophia-Antipolis a success. They can set up technology partnerships with universities and research institutions. At the Toulouse technopolis, for example, Elf Biologie Sanofi hired a university researcher to study a "cutting-edge" topic that was outside its usual realm of expertise, and supplied her in return with the material resources to pursue her own work. Technology centers seem to provide the ideal conditions for breaking down the traditional walls that separate French companies, research institutions, and schools.

Regional collectivities (cities and groups of towns), concerned that they not be left out of the major forces shaping economics, also find a formula that is friendly to their development. Technology centers provide old industrial regions such as Metz, Nancy, and Saint-Etienne, for instance, with a tool for converting to new industries and changing their image. In a different context, Vienna general-council president Rene Monory, commenting on Poitiers's Futuroscope, explains that "We had no chance of catching up with the other French departments except by creating a psychological shock that would make us stand out."

Technology centers also mesh with DATAR's concern for balanced regional planning. They prevent research and innovation potential from remaining concentrated in big groups and in the Paris region. Finally, the jobs created by technocenters are pure profit for the state, which can hang on to its pennies.

The Atlas des Technopoles estimates that over 1,500 companies have settled in the seven most advanced regional technology centers (Sophia-Antipolis, Nancy, Meylan, Rennes, Lyon, Toulouse, Montpellier) outside of Paris-South. They have created or transfered 35,000 jobs there, and nearly 4,000 hectares of land have been set aside to accomodate them.

Problems

Although the recipe is attractive, the mayonnaise does not set easily and sometimes goes sour. A region's initial investment in a technology center is always sky-high: acording to experts, from 100 million to 1 billion French francs [Fr] over a 10-year period. Projects are always slow to get off the ground, and sometimes mark time. Saint-Etienne, for instance, is finding it tough to put

together a coherent development project. And it takes several years to measure a center's repercussions.

Moreover, creating a technopolis does not in itself resolve the old antagonisms between players. State-regional quarrels have come to focus on technology centers. So much so that DATAR, though one of the parties most concerned, ducked the crossfire for years. Criticism in Toulouse, for example, has bristled: The state is accused of wielding regal power and elected officials of showing no interest in economic questions. The history of technology centers is also littered with quarrels among rival projects in the same region, such as in the southeast between Marseille and Aix-en-Provence. Since the Paris region itself is structured as a "giant technopolis," it is holding its lead....

The manufacturer picture requires similar touchups. In 1990, DATAR's report on the Zone for Scientific and Technical Innovations and Achievements (ZIRST) in Meylan (Isere) noted that competition was fierce there, and that keeping results confidential had become a major problem in small, innovative companies.

Technology centers can also be the victims of their own success, with the attendant risks of asphyxiation. An example is Sophia-Antipolis, where the development of collective infrastructure and equipment lagged behind the park's growth.

Finally, spurred by economic hard times, many cities have unblinkingly and misleadingly rebaptized simple industrial areas as technopolises, to attract companies and create jobs. The "real MacCoys" consider such competition dishonest and harmful, and have formed an association dubbed France technopoles, which has registered the trademark.

Economic Impact

"Technology centers innovate technologically, but they also innovate in the realm of economic practices and relations between players of different—and often competing—cultures," said Philippe Loesch, technopolis development consultant.

It is not easy to measure the real economic impact of technology centers. Supporters and adversaries are forced to admit to a draw on the question. A huge bone of contention is whether the centers create jobs on site. Are jobs created, for instance, because big companies relocate a part of their activities there or because of the technology centers' own dynamics? That is the dilemma raised by Meylan (Isere), where a third of the jobs were created by two companies, Merlin Gerin and the National Center for Telecommunications Studies.

Another question is whether a technopolis can be considered a creator of jobs if it sends out more than it brings in over the period of a year. This happened in Rennes, where 920 jobs were created and 1,280 transferred in late 1989.

There is also some dispute about the regional impact of technology centers. Some people argue that the centers create a regional ripple effect, while others say they establish a two-tiered region, with extremely well-equipped hubs on one side and "deserts" on the other.

In these critics' view, the development of new information technologies makes such concentrations all the harder to justify. Others are opposed to the very concept of "high-tech segregation", and believe we are recreating the single-industry regions of yesterday—a backward form of regional development planning. The issue is not a simple one...

Typology

Although French technology centers were all built on the same basic principle (networks), they have taken on very different forms. Here are a few representative examples of the genre.

- Sophia-Antipolis, the pioneer, was inaugurated in 1969 to reconcile economic growth and quality of life. It is a 2,300-hectare park surrounded by a very large green belt. Designed to be a single site outside the urban center of Nice, it comprises over 800 companies and organizations specializing in information science, electronics, telecommunications, health, and energy.
- Paris-South, the giant, accounts for 43 percent of French research and development potential. It is home to big prestigious schools (HEC/School for Advanced Business Studies, Supelec, Polytechnique, ENSIAA, etc.) and links a network of technology centers and sites, notably the urban centers of Evry, Massy, Saint-Quentin, and Melun-Senart. Its strong cards are information science, electronics, biotechnologies, energy, automobiles, aeronautics, mechanics, and precision instruments.
- Grenoble, the changing technopolis. The Meylan Zone for Scientific and Technical Innovations and Achievements is made up, on the company side, of small data-processing and electronics firms. It is one of the links in a tetrapolis that is being formed and that is meant to spur more comprehensive development in Grenoble and Isere.
- Montpellier, the exhaustive, boasts five industries (agro-food, medical, data-processing, telecommunications, and tourism and recreation), six universities, 12 big schools, 450 companies, and 25 research centers. They are scattered in different parks that keep greater Montpellier humming at a "technopolitan" pace.
- La Rochelle, the maritime center. Water, the agro-food industry, and the French language are the three pillars of this technopolis, which is immersed in information science.
- Poitiers, the technology center with originality. Futuroscope is not laying claim to the title of technopolis. But it has all the makings of one: a science entertainment park, a concentration of audiovisual technology schools, and a communications industry with powerful capabilities.

Glossary

- Technopolis or Technology Center: an economic zone in which cutting-edge industries, research centers, and universities work, and which is organized in various ways around the principle of working in networks. Each French technopolis has its own characteristics (see typology).
- Technology Park: usually a subunit of a technopolis, it consists of "high-technology" companies but does not include research laboratories or universities. The Vatine park in Rouen, for instance, houses 60 manufacturers specializing in plant biotechnology, information science, electronics, and so on.
- Science Park: It includes cutting-edge industries and research laboratories but not universities. An example is Agropolis, one of the science parks of the Montpellier technopolis.
- Nurseries: moderate-rent buildings equipped with joint services such as data-processing, which house infant companies. Example: the European Company and Innovation Center of the Nancy-Brabois technopolis.
- Multipole Technology Centers: They are organized around several geographic centers and themes. Bordeaux Technopolis, for instance, takes in Montesquieu (biological and medical engineering), Bordeaux Technowest (aeronautics and space), Bordeaux Unitec (new materials, electronics), and Bordeaux (trade, finance).
- Technopolis Cities and Urban Centers: the technopolis is integrated into the city, as in Mans.
- Technopolitan Area: It combines different technology centers in a region, such as the Science Cite Ile-de-France South, the High Technologies Corridor in the Southeast, and, internationally, the Montpellier/Seville/Bari corridor.

The French Network: Besides those shown on the map, France has 34 sizable technology centers (existing or planned). They are: Villeneuve-d-Ascq Technopolis in Lille; Moulin-Leblanc High Technology Zone in Charleville-Mezieres; Compiegne Technology University in Compiegne; Vatine Technology Park in Rouen; Caen-Normandie Technopolis in Caen; Cite Descartes in Marne-la-Vallee; Brest Iroise in Brest; Quimper-Atlantique Innovation Pole in Quimper; Rennes Atalante in Rennes; South Brittany Innovation Park in Vannes; Atlanpolis in Nantes; Angers Technopolis in Angers; Le Mans Technopolis in Mans; Orleans Innov'espace in Orleans; Porte oceane in Niort; Bordeaux Technopolis in Bordeaux; Pau-Pyrenees Heliopark in Pau; Agropolis in Agen; Toulouse Labege Technopolis in Toulouse; Georges-Besse Science and Technical Park in Nimes; Agro-park in Avignon; Aix Europolis in Aix-en-Provence; Chateau-Gombert Technopolis in Marseille; Toulon Var Technopolis in Toulon; Micropolis in Gap; Saint-Etienne Technopolis in Saint-Etienne; Savoie Technolac in Chambery; Lyon Technopolys in Lyon; Gex Regional Technopark in Gex; Bourgogne 2000 in Creusot; Magny-Cours in Nevers; Nancy-Brabois Innovation in Nancy; Innovation Park of Illkrich in Strasbourg; Metz 2000 in Metz.

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Austrian Programs To Promote Technology Viewed

93WS0032B Duesseldorf HANDELSBLATT in German 8 Oct 92 p B5

["The Greatest Obstacle to Innovations Is the Acquisition of Suitable R&D Personnel"]

[Text] To be sure, Austria is handsomely endowed with subsidy programs. But in many cases they are strictly defensive in nature, which is to say that, generally speaking, they are subsidies to protect jobs. On the other hand, support funding for technology is meager indeed. The results of the government's technology support programs has been analyzed. In three-fourths of the projects, stimulative, accelerative, and strengthening effects predominate. An initial effect is reported for 20 percent, a simple acceptance and participation effect was found for 5 percent of the projects. Direct job-creation effects are slight, and there is no additional licensing income.

The programs were mostly aimed at priority targets like microelectronics and data processing, computer-aided design/computer-aided manufacturing (CAD/CAM), as well as biotechnology and genetic engineering. On the one hand, the direct subsidization of select research institutes in the high-priority fields of technology strengthened the R&D infrastructure, and, on the other hand, project-directed support of companies stimulated technology-oriented investments (promotion of technology applications).

In the case of the promotion of technology-applications, a total of 376 projects received direct grants of 730 million Austrian shillings [OS]. The countable investment volume of the subsidized projects amounted to OS4.6 billion. Two-thirds went to the priority fields of microelectronics and data processing, 20 percent to 23 biotechnology and genetic engineering projects, and 13 percent to the very small 160 CAD/CAM projects. Of the funds, 91 percent went into industry and manufacturing. Among the industrial branches, the electrical and electronics companies were clearly in the lead with 52 percent of the grants, followed by the machinery-manufacturing and steel industries, the iron and metalware industries, and chemistry.

The projects supported are chiefly concerned with product innovations. Only in the CAD/CAM support program (83 percent) do purely process innovations play a dominant role. Basic scientific research was limited almost exclusively to biotechnology and genetic engineering.

The effects of the subsidy programs, as ascertained by the Austrian Institute for Economic Research (Wifo), on balance show direct, but very slight, job-creation effects. Two-thirds go to microelectronics and data processing, one-third to biotechnology and genetic engineering.

CAD/CAM promotion is almost neutral with respect to job-creation. Licensing income from the utilization of the subsidized projects could not be ascertained. Up to 1990 the cash-flow in each of the supported companies was 2.3-times the support funding. By 1990 the cost reductions realized in the course of process innovations amounted to 2.9 times the support grants expended in 1985/1987. However, this finding is distorted by one major project, without which the cost reductions would have only amounted to 50 percent of the support grants.

About 63 percent of the subsidized companies named the acquisition of suitable R&D specialists as being among the obstacles to innovation in their industrial process. Often the uncertain market development (34 percent), organizational problems (29 percent), and converting technical know-how into marketable products (27 percent) were mentioned; on the other hand, only 27 percent of the companies considered the lack of capital to be an obstacle.

In roughly three-fourths of the cases, the subsidization that a particular project received resulted in acceleration or expansion. The companies reported true initial effects from the subsidization for only one-fifth of the projects. Most frequently there are initial effects among the larger, long-term biotechnological and genetic engineering projects, which had already received supporting grants several times previously. The subsidies also had a partial effect on international location decisions. Wifo could identify no initial effects resulting from CAD/CAM grants. In 5 percent of the cases (mostly CAD/CAM), those questioned confessed simply to accepting and participating in the grant program.

Wifo interpreted the double subsidization strategy, namely, project-targeted financing of companies as well as direct support of research facilities and the reduction in third-party acquisition through R&D cooperation, to be a positive move in the direction of an integrated technology policy program, involving various phases and aspects of the innovation process by combining measures and instruments. Some frictional losses were ascertained during the program conversion process. The differing models of the participants as well as Austria's historically traditional investment structure were named as causes for the frictional losses. This may also be seen in the predominance of hardware as the medium of technology-applications support.

France: Curien Proposes Over 5 Percent R&D Budget Increase

93WS0033B Paris LE MONDE in French
5 Oct 92 p 10

[Article by Jean-Francois Augereau: "Despite Budgetary Austerity, Research Budget Expected To Increase by Over 5 Percent in 1993"]

[Text] *With a budget bill totaling 53.7 billion French francs [Fr], up 5.25 percent over 1992, and despite its austerity, Minister of Research and Space Hubert Curien is narrowly maintaining the priority that has been accorded to research over the past several years. But, if voted, these appropriations will not suffice to put France's spending on research at 3 percent of GDP [gross domestic product] as had been hoped.*

"We may have been fearful, considering the intent of the government to contain the growth of public spending. Finally, the civil research budget has been increased substantially with respect to the other sectors." The total increase is more modest than it has been in preceding years, "inasmuch as, with Fr53.7 billion[(1)] 1993 will increase not more than 5.25 percent insofar as concerns general operating expenses (DO) and multi-year program authorizations (AP), versus 7 percent in 1992, 7.3 percent in 1991, 7.1 percent in 1990, and 7.6 percent in 1989."

Despite this falling off of growth in a sector that has always been sustained by the Socialist government, the 1993 budget bill is basically reassuring to scientific circles. General operating expenses, which cover almost exclusively the pay of personnel in the public sector, total Fr26.6 billion, up 5 percent, while program authorizations, which determine the future of R&D, total Fr27.1 billion, an increase of 5.5 percent, to be shared by public-sector research activities (+ Fr500 million), space programs (+ Fr600 million), and support of industrial research (+ Fr300 million).

For the second year in a row, the rise in spending appropriations (CP) for the year, totaling Fr26 billion, up 5.7 percent, will slightly exceed that of new APs. In all, these outlays translate into allocations of the total civil research and development budget (BCRD) as follows: Fr35.5 billion, or two thirds of the total BCRD, to public-sector research, the remaining third being divided up between space activities (Fr9.5 billion for CNES [National Center for Space Studies] and METEOSAT) on the one hand, and technological development and industrial research (Fr8.9 billion) on the other[(2)].

Three Heavyweights

A more detailed analysis shows that the budgets of the government agencies account for approximately three fourths of BCRD appropriations. As is the case every year, the CNRS [National Scientific Research Center], CEA [Atomic Energy Commission], and CNES receive the lion's share, with over Fr28 billion among the three. The CNRS's share, Fr12.4 billion (DO + AP), is up 4.5 percent, and the CNES's, Fr9.2 billion, is up 7 percent. With the approach of the European Space Ministers Conference to be held around the beginning of November in Granada, this budget bill marks a continuation of the French outlay on space but it does not resolve the CNES's budgetary problems, owing to its heavy indebtedness.

After a long period of budgetary austerity, and badly buffeted this summer by bills reforming its organizational structures and missions, the CEA, can look forward next year to a short spell of good weather, with credits totaling Fr6.5 billion, up 3.8 percent. But the seeming promises of this outlook are failing to convince the CGT [General Confederation of Labor], which expresses concern, in a communique published around the beginning of September, regarding what has or is to become of part of its civil subsidization through the CEA, amounting to Fr1 billion, under the draft budgets submitted by the Defense Ministry (Fr300 million) and the Ministry of Economy and Finance (Fr740 million).

In addition to the foregoing operations, a special effort is being made to boost medical research, with increases of 6.6 percent for INSERM [National Institute of Health and Medical Research]; 10.5 percent (Fr210 million) for ANRS [National Agency for AIDS Research]; and 40 percent for CEPH [Human Polymorphism Studies Center], whose work on the sequencing of the genome has produced a noteworthy breakthrough. INRIA [National Institute for Research on Data Processing and Automation] will also receive an increase (7.5 percent) in its appropriations for work on data processing and automation, and ADEME [Environmental and Energy Regulatory Agency] an increase of 9.5 percent for research on the environment and the harnessing of energy.

Added to these budgetary measures, of course, are those designed to aid employment. New jobs in research to be created in 1993 will total 470, of which 300 will be for researchers, including 70 teaching researchers jobs under the mobility-in-higher-learning program, and 170 in ITA [engineer, technician, administrative] categories. In all, the Ministry notes, between 1989 and 1993, jobs numbering as follows will have been created: 1,625 researchers and scientific staffers plus 1,500 ITAs. Of these totals, 1,208, of which 1,014 for ITAs, are in the EPST [Public-Sector Science and Technology Enterprises] sector.

Despite austerity and a difficult economic situation worldwide, this budget bill should enable France to maintain its fourth-place standing, after Japan, the United States, and Germany, in the ranking of the industrial powers for outlays on research.

Footnotes

1. To be added to this sum are the appropriations for military research, totaling some Fr30 to Fr35 billion. Defense also participates to the extent of Fr3 to Fr3.5 billion in the outlay for space activities.

2. Appropriations for industrial research will total Fr8.6 billion if subsidies to civil aeronautics programs in this sector, with the research tax-credit provision to be extended for three years (1993-1995), are included.

France: 1993 Civil R&D Budget Up 5.25. Percent

93WS0039A Paris AFP SCIENCES in French 1 Oct 92 pp 1-8

[Article entitled: "France: 53.7 Billion Francs [Fr] for Scientific Research and Development in 1993"]

[Text] Paris—In the words of research and space minister Hubert Curien on 1 October, the 1993 draft budget for civil research and development (CRDB) "confirms the priority given to research." The budget is up 5.25 percent over 1992's (Fr51 billion), to Fr53.7 billion.

"At a time when the government is seeking to control growth in public spending, this increase confirms the priority given to research since 1988. It is my job to say that it is a good budget. I can say so with conviction," added the smiling minister.

Mr. Curien also noted that the government had decided to exempt all research organizations from budget freezes—an additional confirmation of the priority it gives the sector. Indeed, while all ministerial departments were affected by a decision to cancel funding that was published 29 September in the JOURNAL OFFICIEL, Mr. Curien pointed out that no research organization was concerned.

Only small sums allocated to industrial research (Fr200 million in payment funds and Fr300 million in program authorizations) were canceled.

Additional subsidies through the EC (Fr3.6 billion) and research tax-credits (about Fr4 billion) will give the scientific community Fr61.3 billion to spend next year. Moreover, the research tax credit program has been extended for three years (1993-95).

Table Information

On page 1: GROWTH OF THE CRDB Initial appropriations bill, including Ordinary Expenditures (OE) and Program Authorizations (PA). In billions of French francs.

1985: Fr38.9; 1986: Fr42.1, including Fr37.6 from an amending finance act (AFA); 1987: Fr38.4; 1988: Fr39.3; 1989: Fr42.4; 1990: Fr45.4; 1991: Fr48.7, including Fr47.7 from an AFA; 1992: Fr51.0, Fr50.7 from an AFA; 1993: Fr53.7. (The budget was Fr19.68 in 1981).

First Table Information

On page 2: THE CRDB FOR 1993 (OE and PA)

The CRDB climbed 5.3 percent to Fr53.7 billion. Industrial research (National Agency for the Upgrading of Research/ANVAR, MICE, civil aeronautics, Research and Technology Fund/FRT) increased 5.6 percent, and received Fr8.9 billion, or 16 percent, of the CRDB. The areas covered by the FRT have remained constant.

Public research (organizations, Atomic Energy Commission, and university research) increased 5.0 percent, to Fr35.3 billion, or 66 percent of the CRDB. Fr25.4 went to OE.

Space research (National Center for Space Studies/CNES and Meteosat) increased 7.5 percent to Fr9.5 billion, or 18 percent of the CRDB.

Second Table Information

On page 2: BIG TECHNOLOGY PROGRAMS (OE + PA = Fr18.1 billion in 1983)

Appropriations for the CNES's OE and PA climbed 7.0 percent (OE were +7.2 percent), to Fr9.2 billion. Program authorizations to civil aeronautics were Fr2.4 billion, up 6.2 percent. The Atomic Energy Commission's allocations for OE and PA were Fr6.5 billion, up 3.8 percent, with PA up 6.8 percent.

Table Information

On page 3: APPROPRIATIONS BY ORGANIZATION 1992-93 Changes in OE and PA. (See following table for exact figures).

1. National Center for Scientific Research/CNRS: Up 4.5 percent, PA up 4.4 percent.

2. National Agronomic Research Institute/INRA: Up 4.9 percent, PA up 4.1 percent.

3. National Health and Medical Research Institute/INSERM (except for the ANRS): Up 6.6 percent, PA up 5.7 percent.

4. Bureau of Overseas Scientific and Technical Research/ORSTOM: up 3.4 percent.

5. National Institute for Research on Data Processing and Automation/INRIA: up 7.5 percent, PA up 5.7 percent.

6. Other EPSTs and Foundations, ANRS and CEPH [Center for Human Polymorphism Study]: slight increase.

7. National Space Studies Center (CNES): up 7.0 percent, PA up 7.2 percent.

8. Atomic Energy Commission: up 3.8 percent, PA up 6.8 percent.

9. Environmental and Energy Control Agency/ADEME: up 9.5 percent, PA up 8.3 percent.

10. Other EPICs: up 3.8 percent, PA up 3.2 percent.

Civil Research & Development Budget (CRDB)

	OE + PA in 1992	OE +PA for 1993
Organizations		
EPSTs		
CNRS and Institutes	11,853	12,385
INRA	2,908	3,051
INSERM (excluding ANRS)	2,156	2,298
ORSTOM	952	985
INRIA	387	416
INRETS	189	201
CEMAGREF	174	184
National Demographics Studies Inst./INED	77	81
Total	18,696	19,601
EPICs		
CNES	8,599	9,199
CEA	6,235	6,471
French Institute for Research on Exploitation of the Ocean/ IFREMER	910	947
CIRAD [Office of International Cooperation on Agronomic Research for Development]	619	647
CSI	593	609
ADEME	241	264
Total	17,197	18,137
Foundations and research institutes in biology and medicine (including the ANRS)	616 (dt 190)	685 (dt 210)
Organizations total	36,509	38,423
University research (excluding co-financed research allocations	2,000	2,130
Education & Training (Research allocations, CIFRE contracts, scholarships)	1,520	1,680
Industrial research (excl. education)		
ANVAR	1,348	1,382
Industry Ministry (innovation and big programs)	3,346	3,580
Civil aeronautics	2,290	2,432
FRT and space industry support (excl. ANRS)	1,235	1,235
Total	8,219	8,629
Other public programs		
Foreign Affairs Ministry (in particular European Nuclear Research Center/CERN)	897	880
METEOSAT	139	197
Other departments & ministries (housing & equipment, culture, agriculture, environment, engineering schools)	1,737	1,758
Total	2,773	2,835
Total CRDB allocations	51,021	53,697

Ordinary expenditures (OE) go almost exclusively to pay the salaries of public organizations, the four biggest of which in terms of personnel are the CNRS, INSERM, INRA, and ORSTOM. Ordinary expenditures totaled Fr26.6 billion, an increase of 5 percent. Program authorizations (PA) came to Fr27.1 billion, up 5.5 percent.

The increase is more or less divided among public research (up by about Fr500 million), space programs (up 600 million), and support for industrial research (up 300 million). Finally, payment funds (PF) have grown slightly more than PA for the second year in a row, and are up 5.7 percent for the whole budget. The CRDB is

creating a total of 400 jobs, 230 for researchers and 170 for engineers, technicians, and administrative staff.

There are three major components in the CRDB. They are:

1) Allocations for public, notably basic, research. Public research appropriations represent two-thirds of the CRDB—or Fr35.3 billion, including 25.4 in OE—and have grown 5 percent.

2) Space programs, including the CNES and METEOSAT, which absorb Fr9.5 billion. These subsidies, which are up 7.5 percent, represent 18 percent of the budget (OE and PA).

3) Funding of technology development and support for industrial research. The total package comes to Fr8.9 billion (up 5.6 percent) and accounts for 16 percent of the CRDB.

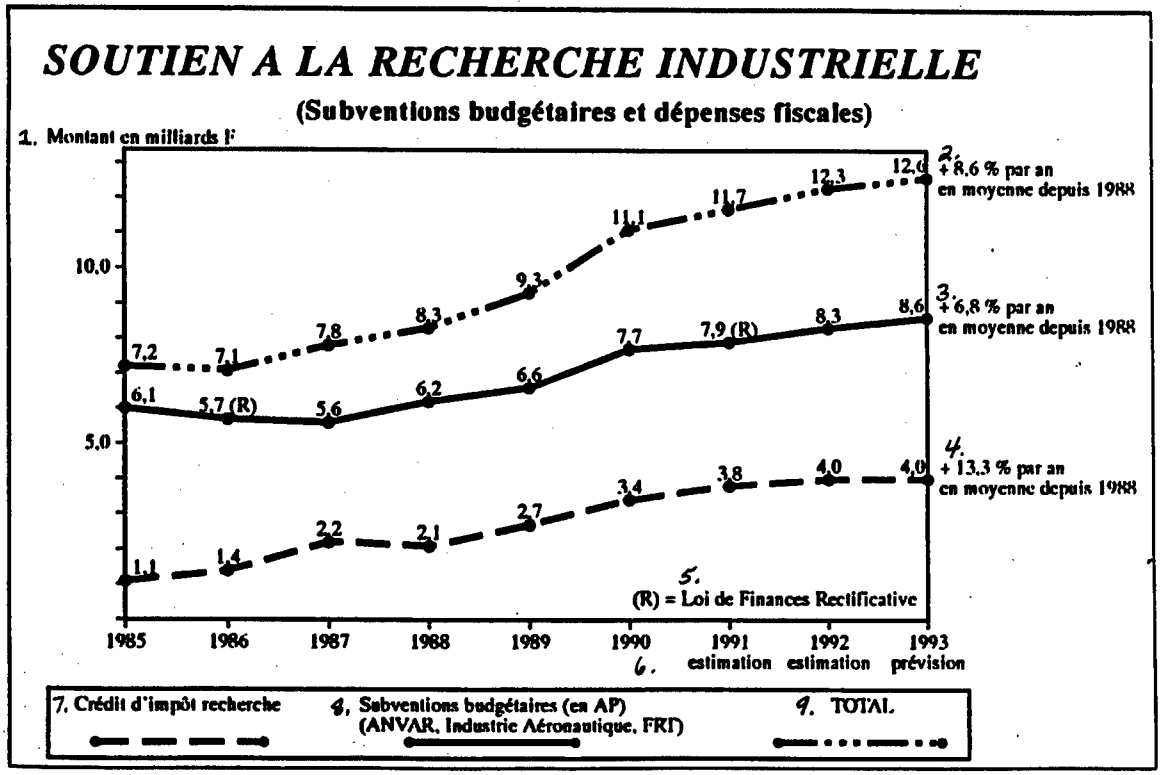
Among the big programs, Mr. Curien pointed out that CNES appropriations are jumping 7.2 percent to Fr8.3 billion, the "sharpest growth" in the whole budget. The money is earmarked first and foremost for the future Ariane 5 heavy launcher (Fr2.72 billion in 1993), whose maiden flight is scheduled for 1996. It is also being channeled to three high-priority programs: the ERS-2 earth observation project, POEM environmental research instruments, and telecommunications with the Artemis satellite.

Moreover, France's financial contribution to Meteosat (in PA and PF) is Fr197 million, up 41 percent over the Fr139 million the French government kicked in in 1992. France's contribution will enable the Meteosat Operational program, including launch of the third satellite MOP-3 and construction of a fourth satellite, to continue. The fourth satellite will take researchers into the second-generation Meteosat program, Phase B of which will begin in 1993.

Civil aeronautics programs (Airbus A-330-340, GE-90 engine, Falcon-2000, Arriel-2 helicopter engine, etc.) have been allocated a package of Fr2.4 billion, which is an increase of 142 million or 6.2 percent.

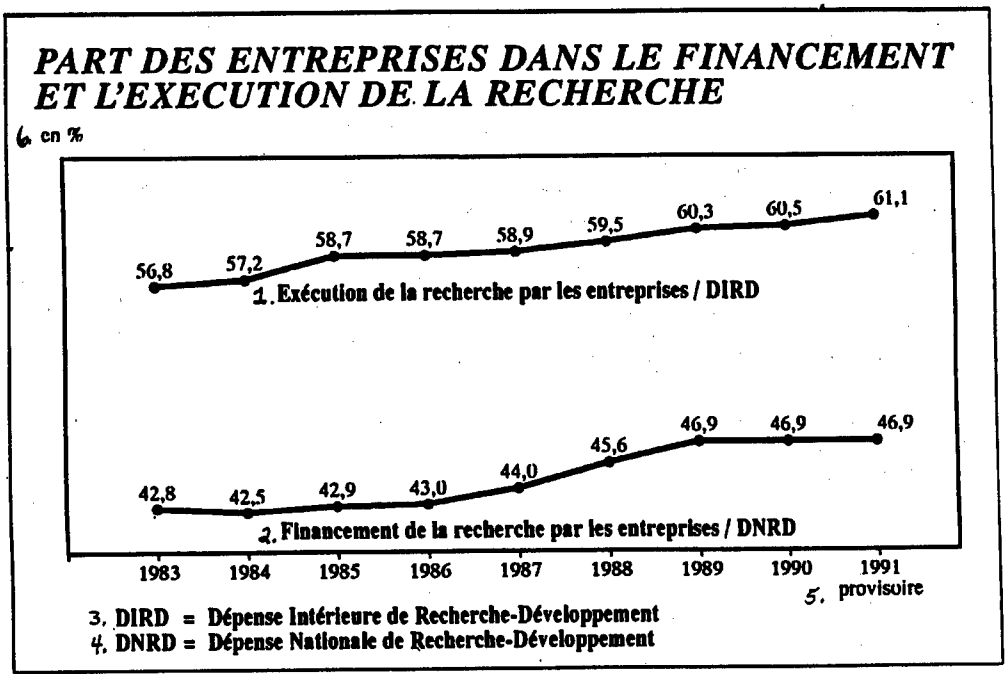
When subsidies to aeronautics programs are figured in, monies for industrial research assistance come to Fr8.6 billion, an increase of 5.4 percent.

The government is showing its interest in small and medium businesses again this year by augmenting the resources of ANVAR, which have more than doubled in five years. The big industrial programs already underway are moving ahead as planned; they include electronics programs, EUREKA, Bioavenir, Transports terrestres (ground transportation), Usine ultrapropre (Superclean factory), and more. Initiatives taken by the French president's office will result in the launch of new projects, notably in the realms of automobiles, waste, data-processing, and factories of the future.



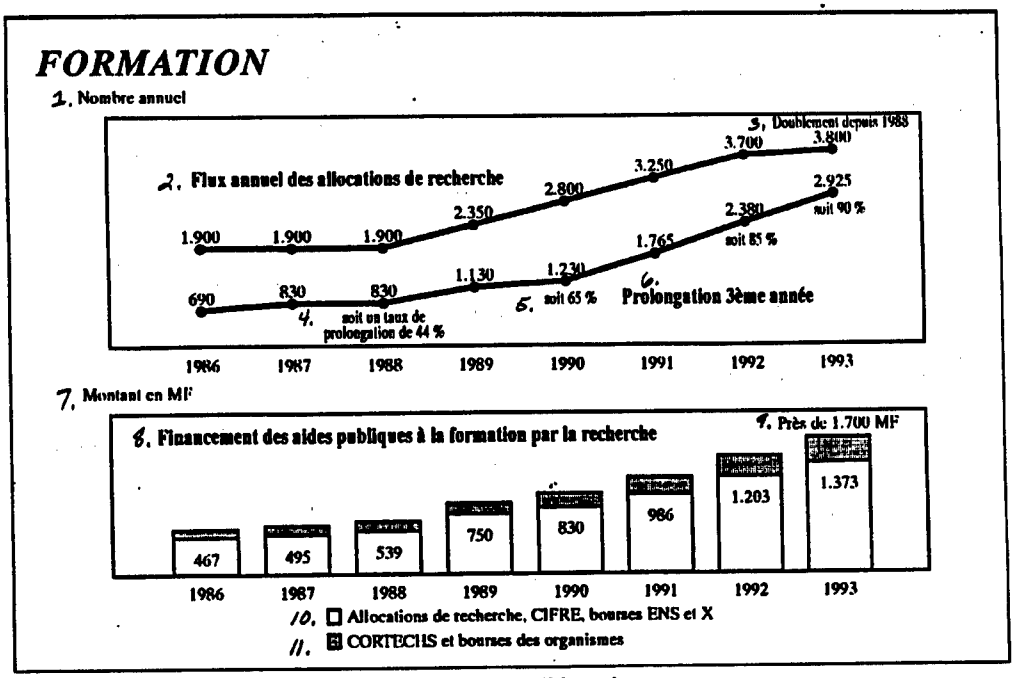
Industrial Research Support (Budget Subsidies and Tax Spending)

Key: 1. Amount in billions of French francs 2. An average of +8.6 percent per year since 1988 3. An average of +6.8 percent per year since 1988 4. An average of +13.3 percent per year since 1988 5. (R) = Amending finance act 6. Estimate prediction 7. Research tax credit 8. Budget subsidies (in PA), (ANVAR, Industrie Aeronautique, FRT) 9.Total



Companies' Share in Financing and Executing Research

Key: 1. Execution of research by companies/IRDS 2. Funding of research by companies/NRDS 3. IRDS = In-house Research & Development Spending 4. NRDS = National Research & Development Spending 5. Temporary 6. In percentages



Training and Education

Key: 1. Annual number 2. Annual fluctuation of research allocations 3. Doubling since 1988 4. Or an extension rate of 44 percent 5. Or 65 percent 6.Third Year extension 7. Amount in millions of French francs 8. Funding of public subsidies for training through research 9. Nearly Fr1,700 million 10. Research allocations, CIFRE, ENS and X scholarships 11. CORTECHS and organization scholarships

The Atomic Energy Commission received Fr6.3 billion in 1992 and will receive Fr170 million more for ordinary expenditures. It will be allocated an additional Fr66 million, or 6.8 percent, for capital spending. The "linkage" between civil and military programs will be shored up to the tune of Fr700 million, which the Defense Ministry will spend on nuclear (Fr300 million), space (Fr260 million), and aeronautic (Fr140 million) programs.

The minister stressed that the "center of gravity" of the Atomic Energy Commission must, despite its multidisciplinary activities, remain in the nuclear industry. Its civil programs will focus on five priority missions: enriching uranium using a laser process; developing innovative designs for future reactors; helping operators of in-service reactors improve their safety; developing research programs on the downstream cycle, particularly the reduction and transmutation of nuclear waste; and continuing international collaboration on nuclear fusion.

In 1991, all public and parapublic research organizations concerned with AIDS spent Fr456 million on research into the disease. The National AIDS Research Agency (ANRS), which was created in 1988, is now considered the premier European research organization in the field. The Agency will receive Fr210 million in 1993, up 10.5 percent. Among other big biomedical programs, the budget has singled out the genome program, whose allocations will grow more than 10 percent over the Fr100 million it received in 1992.

The CRDB is contributing Fr5 billion to research aimed at understanding and protecting the environment, primarily through the new Environmental and Energy Control Agency (ADEME). But it will also support environmental research by funneling money to the CNES (earth observation), INRA (work on plant and animal species), IFREMER (ocean environment), ORSTOM (in its development work), and various CNRS departments.

Industry Budget

The Ministry of Industry's draft budget for 1993 is up 3.5 percent. It is climbing to Fr19.38 billion, compared to Fr18.72 billion in 1992, or just slightly more than the average state-budget increase of 3.1 percent. If we add the Fr260 million from the sale of publicly-owned shares which the government plans to disburse to Thomson and Bull, the increase will be 4.9 percent. Ordinary expenditures are growing 1.3 percent, while capital spending, essentially on company subsidies, is rising 8.7 percent. Industry's budget reflects two great priorities, said Minister Dominique Strauss-Kahn: to continue efforts to improve the competitiveness of companies, and to increase various kinds of assistance for industries in transformation.

The ordinary-expenditures budget for Meteorologie Nationale, which falls under the Ministry of Equipment, Housing, and Transportation, is Fr1.04 billion.

Environmental Budget

The environmental budget is Fr1.60 billion and has grown 9.4 percent. It especially reflects stepped-up efforts to preserve natural landscapes, in which the government will invest over Fr160 million. The Ministry has made new commitments to protecting the quality of life in cities (Fr130 million) and combatting the greenhouse effect. An investment of Fr130 million will enable "the state to significantly renew its programs" against everday noise pollution. In another innovative budget item, Fr26 million will be spent to combat the greenhouse effect.

The budget also provides for continued water (investments of Fr260 million) and waste treatment. The new modernization fund, which will be financed by a dumping tax, will bring in nearly Fr350 million in 1993. ADEME plans to create 30 new jobs.

1993 CRDB—jobs created

	Creation 1993			Personnel 1993		
Jobs	**Researchers**	**M.E.N.* Mobility**	**ETA [Engineers, Technicians, Administrative staff]**	**Researchers****	**ETA**	**Total**
Organizations						
EPSTs						
INRA	30	5	12	1,765	6,866	8,631
CEMAGREF	4	0	7	70	545	615
INRETS	6	2	4	151	242	393
INRIA	20	5	12	297	380	677
CNRS & institutes	40	41	2	11,417	15,323	26,740
INSERM	50	10	35	2,092	2,781	4,873
ORSTOM	9	5	14	855	778	1,633
INED	1	2	1	64	103	167
Total EPSTs	160	70	87	16,711	27,018	43,729

1993 CRDB—jobs created (Continued)

	Creation 1993			Personnel 1993		
Jobs	**Researchers**	**M.E.N.* Mobility**	**ETA [Engineers, Techncians, Administrative staff]**	**Researchers****	**ETA**	**Total**
EPICs	Managerial/ Professional		Non-managerial	Managerial/ Professional	Non-managerial	Total
IFREMER	9		4	570	562	1,132
CIRAD	9		4	647	537	1,184
ADEME	12		5	90	58	148
CSI	0		0	424	487	911
CNES	5		0	1,090	900	1,990
Total EPICs	35		13	2,821	2,544	5,365
Foundations						
Pasteur Institute Paris	3		4	150	599	749
Pasteur Institute Lille	2		3	10	59	69
Pasteur Institute Overseas & Foreign	2		2	48	47	95
Curie Institute	1		3	4	99	103
Foundations Total	8		12	212	804	1,016
Organizations Total	203	70	112	19,744	30,366	50,110
Ministries Total	27		58	1,493	3,079	4,572
CRDB Total	230	70	170	21,237	33,455	54,682
Administration MRE			5		331	331
Atomic Energy Commission	(p.m.)		(p.m.)	5,048	7,572	12,620

(*) The national education budget (university section) is creating 70 research professor positions to host researchers moving between different organizations.

(**)Researcher personnel figures include 1993 authorizations for extra staff.

Transfers within EPSTs are included in the 1993 personnel figures.

INRA: 100 jobs previously funded in the MAF budget were granted regular status.

CEMAGREF: Permanent staff appointments and personnel reclassifications changed the researcher/ETA breakdown.

France: CEA Mandate Reaffirmed

93WS0040C Paris AFP SCIENCES in French 1 Oct 92 pp 21, 22

[Text] Paris—The three ministers—defense, industry, and research—with jurisdiction over the Atomic Energy Commission (CEA) have made their decision. The CEA will remain faithful to its two traditional areas: civil nuclear research and the research, development, and manufacture of means of "nuclear dissuasion."

The three ministers gave instructions to that effect in the letter of mission addressed to the CEA's administrator general Philippe Rouvillois. An informed source disclosed the broad outlines of the letter on 29 September.

The directive, which also calls for a "significant reduction" in the CEA's general expenses, rather discreetly squelches expectations that a new reform of the agency would be announced. The moratorium on nuclear testing, changes in the military nuclear program, a relative slowdown in the civil program, and further studies to determine whether operation of the Superphenix supergenerator should resume had all placed the public establishment and its 19,000 employees in an uncomfortable position.

Especially as the Agency's hunt for fresh resources—notably in the form of a big technology group dubbed Thomson-CEA-Industrie, that would combine the nuclear, television, and chip industries—ultimately fizzled to a more modest plan limited to electronic components.

Today the three ministers, Pierre Joxe, Dominique Strauss-Kahn, and Hubert Curien, believe the CEA should stick to its traditional occupations, while becoming more open to collaborating with outside organizations. CEA collaboration on basic research, they insist, especially with the National Center for Scientific Research (CNRS), is "more vital than ever."

The CEA must "intensify cooperation with public research institutions," notably by creating joint groups or concentrating some studies in partner organizations "when the CEA lacks specific know-how."

The agency will have to step up its civil nuclear studies on the future of nuclear power, including research on the feasibility of laser enrichment, new types of reactors, and solutions to the basic problems of spent fuel.

The CEA will have to "pursue its effort to downsize" its military applications directorate, in keeping with the military appropriations bill which stipulates how much of the national defense budget will go to nuclear weapons over the next few years. On the other hand, nuclear propulsion research "remains a priority."

In addition to these two main areas, the CEA will have to "give priority" to related fields, including materials, environmental, and radiobiology programs. Finally, in the fields of nuclear safety and international relations, where the Atomic Energy Commission serves the state, it must "make sure it maintains and expands its expertise." And it must think about the uses of the research being done in the IPSN, in conjunction with the president of its executive committee.

Mr. Rouvillois, whose appointment as chief of the CEA was extended for three years in July, will let the government know how he plans to implement these orientations under [current] budget restrictions before the end of the year. The CEA has a "nuclear" civil research budget of some 4.7 billion French francs [Fr] this year, in addition to an approximately Fr3.5 billion "non-nuclear" package (matter, electronics, and information sciences...).

Germany's Fraunhofer Institutes To Seek More Industrial Contracts

93P60043A Duesseldorf HANDELSBLATT in German 3 Nov 92 p 8

[Text] The institutes of the Fraunhofer Society (FhG), which mainly engage in applied research, intend to expand considerably their contract research for the economy and are interested in getting such contracts.

This was made clear by the FhG leadership in a joint press conference in Bonn with Minister of Research Heinz Riesenhuber (CDU). The minister announced that the high percentage of direct government financing should now be reduced while the Fraunhofer Society in the old laender is becoming increasingly consolidated.

According to Riesenhuber, this is particularly true for the area of contract research. The total turnover of the FhG rose from DM254 million (1981) to DM995 million (1992). One is aiming for DM1,053 million for next year. In this year alone, contract research amounted to DM841 million. Over DM200 million of this came from business and industry: roughly 60 percent from small and medium enterprises, and 40 percent from large enterprises.

Riesenhuber stressed that companies in fields like machine-building can no longer "rely on their own abilities" in all scientific disciplines for new developments. Here the 39 Fraunhofer institutes offer their services as skilled partners. The current FhG president, Professor Max Syrbe, stressed that the institutes are considerable possibilities for expansion in their cooperation with business and industry. Syrbe's already chosen successor, Professor Hans-Juergen Warnecke, will take office on 1 October 1993.

Commentator on Future of Swedish Research Policy

93WS0043A Stockholm SVENSKA DAGBLADET in Swedish 14 Oct 92 p 2

[Article by Jonas Hellman: "Swedish Research in the Future"]

[Text] The economic crisis is a reminder that we cannot take our prosperity for granted. Only 100 years ago Sweden was a very poor European nation. In the late 19th and early 20th centuries almost a million Swedes fled to North America in search of a way to support themselves.

Forestry and mining have formed the basis of our economic development. That is what provided us with export revenues that enabled us to buy goods from other countries. For a small country like Sweden trade is a necessary requirement for prosperity.

It is easy to get the feeling that Sweden's best days are in the past. The number of employees in Swedish industry has declined from around 1 million in 1980 to around 850,000 today. Only one of our 20 biggest export companies—Tetra Pak—was established after World War II.

Daycare centers and branch libraries are certainly good things to have. But they are not enough to support us. If we Swedes are to maintain a high standard of living we must continue to have a big export industry sector that pulls money into the country in the future.

How will we get a big export industry? If there was a simple answer to this question the right measures would certainly already be in place. But all experience indicates that a favorable economic climate is needed. Taxes, loan terms and regulations must not be formulated in such a way that they scare off investors.

Another important factor is the ability to develop new proficiency. Sweden has traditionally been outstanding in this area. Only Japan, Germany, Switzerland and the United States spend an equally large share of GNP on research and development work, R&D.

On Monday the Education and Research Ministry issued a report on how Swedish research policy should be formulated in the future. The report, which was prepared by Professor Hakan Eriksson and Nils Karlsson of the research commission's secretariat, is aimed at the year 2000. The content is said to be a synthesis of proposals that emerged from a series of hearings, seminars and conferences the ministry held earlier this year.

According to the report Swedish research today faces five big challenges:

The first one involves finding the right balance between "breadth" and specialization. As an industrial nation we must naturally keep abreast of what is happening in various scientific areas. But where really advanced research is concerned our limited resources make it advisable for us to specialize in the sectors where we are out in front.

Eriksson and Karlsson want to prioritize technical and scientific research that has special relevance for our business sector. In addition they want to set up so-called elite research units where our most competent researchers will have a chance to work together.

The elite research units have been singled out by the mass media as the big news story in the report. The classic Swedish equality perspective has manifested itself here although few people have ventured to oppose the proposal directly.

The second big challenge, according to the report, is to increase flexibility and the capacity for renewal in research. To bring this about Eriksson and Karlsson want the state to reward results in allocating research resources. They also want to introduce deductions for private research contributions, which would improve conditions for private research institutions.

Third, the report notes the importance of increasing the exchange of knowledge between educational institutions and industry. Swedish universities and technical colleges have more than 30 percent of Sweden's total R&D resources at their disposal, a considerably larger proportion than in other countries. An important measure advocated here is to stimulate market-controlled projects involving cooperation between colleges and firms.

The fourth big challenge, according to Eriksson and Karlsson, is to increase the number of researchers. Today there are not enough doctoral candidates to supply industry with the competence it needs. In addition a disproportionately large share of people with doctor's degrees go into careers in the public sector.

A prerequisite for changing this is to give a higher priority to research areas that are relevant for industry. Expansion of the number of doctoral student openings should concentrate on technology, the natural sciences and the humanities, according to the report.

The fifth big challenge is to improve international cooperation. To achieve this Eriksson and Karlsson recommend encouraging Swedish businesses and researchers to participate in the EC's research programs, among other things.

One question that should be raised is the extent to which the state is capable of stimulating good research and knowledge development. Both educational policy and the public sector's research investments are important, of course, but ultimately it is always individuals who discover ideas and develop them.

In Sweden the public sector accounts for less than 40 percent of total R&D resources. The research results that we have achieved so far are hardly due to the fact that the politicians have doled out research funds in an unusually wise way. Instead the important thing has been that we have maintained a social climate that encouraged hard work and freedom of thought.

The proposals that Eriksson and Karlsson have presented are not revolutionary in themselves. What distinguishes the report from the research bills that were written in the 1980s is the realization that politicians have limited possibilities when it comes to controlling the development of knowledge.

French Laboratories Recruit Eastern European Researchers, Engineers

93WS0047A Paris LIBERATION in French 11 Oct 92 p 7

[Article by Philippe Douroux: "French Labs Head-hunting in the East"]

[Text] Nearly 400 engineers or researchers from the former Soviet Bloc, the majority of them Russian, are working for French enterprises or research labs. A process which is akin to wooing a know-how that the West is finding difficult to evaluate.

He was supposed to come to work for Thomson. A specialist in hyperfrequency, the Russian researcher was then drawn by the Ecole Polytechnique labs, where he could have worked on contract for Thomson. He finally was hired in Germany. Since then he has not been heard from. There are nearly 400 of these engineers and researchers from the former Eastern Bloc who have gone to work for French enterprises or labs. Most are Russian but there are also Ukrainians, Romanians, Hungarians, Czechs, or Slovaks among the talent spotted by French universities or businesses as they pursue their work for Ciments Francais, the Atomic Energy Commission (CEA), Societe Europeene de Propulsion (SEP), Pechiney, Saint-Gobain, the Pasteur Institute or even the General Delegation for Weapons (DGA).

To prospect the immense forest of the scientific and industrial complex of the former Eastern Bloc and to pick out the men and teams "you have to work with," dozens of French delegations are rapidly succeeding each other in Moscow, Kiev, Saint Petersburg, or Budapest. Their paths cross those of cohorts of Japanese, Americans, or Germans—the other scientific powers are more discreet—all in quest of that cutting-edge lab where solid links must be formed as soon as possible in order to prepare for the future.

The Ministry of Research is by far the leading provider of visas. This year, 135 post-doctoral scholarships and 114 high-level scholarships were granted to researchers

from Central Europe—40 percent come from CEI and 60 percent from the other countries of the former Comecon. The first of these are spending or will spend between six and 12 months in French labs while the second group will be able to stay for only one to six months. The gears of this arrangement, regularly oiled by an interministerial committee formed a few months ago, are very simple: a university or institute of higher learning finds beyond the Elbe, the institute with which it wants to work and then appeals to the administration. Couples are thus formed: for example, the Steklov Institute in Saint Petersburg and Jussieu (Paris-VI-Paris-VII) in mathematics and physics, or the molecular biology laboratory at the Pasteur Institute in Strasbourg with that of the Poutshino Institute.

The Ministry of Industry has also financed about 20 so-called "industrial" scholarships. In these cases the researcher spends six months or a year working in the labs of French enterprises. All, or nearly all, sectors are represented with Thomson (electronics), Rhone-Poulenc (pharmaceuticals), Ciments Francais (construction materials), Genset (biotechnology), Pasteur-Merieux (medication), or Pechiney (aluminum). The motivation is the same for all. "It's all about networking," explains a spokesman at Ciments Francais where two engineers from the Romanian cement research center, Ceprocim, are being hosted. The same word, "connections," is used each time, and each time the speaker is reluctant to qualify them as "business." It is true that the prospect of a solvent market still looks remote. So in the meanwhile why not test the water, why not be on your mark so that when the day comes, you are ready...

The concern of the CEA is both more concrete and more immediate since it's a question of training engineers in matters of safety for nuclear power plants. Once they return home, the high-level technicians trained in France will instinctively turn to their former colleagues, thus becoming de facto excellent representatives for France and its technology. While everyone else is casting lines at random, the CEA is doing things in a big way by bringing in without benefit of any public funding, some 40 engineers to its civilian installations. For the military, nuclear secrecy is of course being jealously maintained.

While discreet, the DGA is by no means idle. In June, a DGA team went to Russia and the Ukraine in order to dig up some 15 engineers or researchers and bring them back to France for a year or 18 months. Officially, there was no question of hiring them. At the end of their stay, they will all return to their laboratories of origin. But will it be possible to prevent a gifted young scientist from staying in France if that is what he wants? Maybe not.

Some enterprises like SEP or Dassault prefer to finance teams on location. Thus SEP, which produces Ariane engines, has signed 33 research contracts with Russian, Ukrainian, or Kazakh laboratories. Five new contracts could be signed for the hypersonic propulsion which will power post-Concord aircraft. Dassault is awaiting the first Falcon tail assembly parts built by Mikoyan. There is no research involved in this instance. The parts, designed in France, are simply fabricated there. At a time when Dassault is laying off engineers, it would be ill-advised to give work to their Mikoyan counterparts. This is therefore clearly a case of establishing contact with one of the most prestigious aircraft manufacturers, whose reputation was made by the MIG. Time will tell what happens next.

Once again the idea is certainly to tie in to know-how from the former Soviet Bloc, but without trying to act as recruiters. In fact the caution of all Westerners can be explained in two ways. On one hand, the Eastern countries have no conclusive technological advantage over their European, Japanese, or American counterparts. Paul Ivan, from Saint-Germain, head of research at DGA, commented that "you can't tell if they are better or inferior. They developed along different lines. Deprived of powerful computation tools, they often proved to be 'cleverer,' they have had ideas that did not occur to us." The second reason is more diplomatic.

A brain raid on the former USSR and its satellites would obviously be unacceptable on the part of countries who talk of "cooperation." This is not the spring of 1945 when the Americans, Soviets, British, and French were racing to snatch engineers from the Hermann Oberth-Werner von Braun team which had built the V1 and V2. In a nutshell, the researchers must be wooed rather than torn away from their country. While some of them did desert, heading for Iraq, Iran, or Algeria, the best of them have stayed or returned, as most of the major headhunters will confirm. One of them finds western caution a bit cynical: "Everybody is hoping for the genuine article, the rara avis or rather the outstanding boss surrounded by a top level team which will make a technological leap possible. Nobody wants to miss his chance."

Danger Seen of Germany's Becoming Technological Colony

93WS0048A Duesseldorf HANDELSBLATT in German 15 Oct 92 p 13

[Article by Dr. Konrad Seitz (German Ambassador to Italy, former Ambassador to Japan, former Director of the German Foreign Office Planning Staff): "Germany Will Become a Technological Colony Without New Industries Capable of Surviving into the Future"]

[Text] HANDELSBLATT, Wednesday, 14 Oct 92, Duesseldorf—According to most business associations, the operating conditions for industrial production in Germany, when compared with those in competing countries, have become so unfavorable that the only solution remaining is to move production out of the country. But the central idea underlying the current debate on selecting the production site, namely, that domestic wages are too high, results in dangerous decisions.

Or does anyone believe that German wages can be reduced to the level of those prevailing in Singapore or

South Korea? The core problem is not the operating conditions (in no way are they all that unfavorable), but rather the basic problem lies really in a double failure:

1. In the last 20 to 30 years, Japan has revolutionized the production process. Japan has replaced stark "Fordism" mass production with flexible "Toyotaism" mass production. The new approach—"lean production"—is based on an essentially new organization of work in the particular company and on a basically new organization of cooperation with suppliers (long-term relations, common development, just-in-time delivery). German managers seem to have slept right through the revolution.

2. The Germany economy has not participated in the new industrial revolution. It is behind Japan and the United States in the transition to the information economy and information society, and, alas, it is falling further and further behind. Both society and policy share the responsibility for this state of affairs.

Even by the end of the 20th century, our standard of living will continue to be borne by industries that arose in the 19th century. On the other hand, the industries, which were established after 1945, have developed only slightly in Germany and indeed in the rest of Europe. Important areas of information technology are under the control of American and Japanese businesses. Germany does not even have its own biotechnical industry.

This appalling situation raises two disquieting questions concerning our future. The first question has to do with the quantity and quality of jobs our economy will be able to make available. The growth industries of our day are the new industries. Japan pushes the development of precisely these industries forward at full speed. Between 1972 and 1985, in the wake of tremendous investments, the share of high-tech industries has expanded by no less than 7.2 percent, and investments since 1985 have increased still further. In Germany, however, the new industries are not growth industries at all. Between 1978 and 1986, their share of the social product has remained unchanged and has not even increased since then. This is also the reason why the unemployment rate in Germany is higher than in either the United States or Japan.

The totally inadequate development of new industries has also had its effect on the quality of our jobs. An ever larger part of our "old" industries has had to compete with the newly industrialized countries of the Third World, which means to compete against industries in countries that pay low wages. Our present-day industrial structure is no longer in a position to maintain our traditional high wages in the future. High wages presuppose high value creation. Unfortunately, the mass production of products with a high value creation index (color TV screens, 36- and 64-bit microprocessors, etc.) takes place in America and Japan.

The second question pertains to the future of our "old" industries themselves. We have brought these industries to a modern level and lead technologically in many aspects of them. However, in order to keep the old industries in the most modern state and in order to design and build the technologically most advanced systems, we have become increasing aware of our unilateral dependence on the delivery of electronic and optronic components as well as the new high-performance materials from overseas. But can any industry really remain competitive if it must buy most of the components that are indispensable if the industry is to remain competitive in the system markets, from Hitachi, Toshiba, and so on?

A great industrial country, which simply cannot exist by producing knickknacks or from the tourist trade, has to have a globally competitive information technology industry and thereby be in a position to enter strategic alliances with American and Japanese businesses. Without an independent information technology industry, it will in the long run also lose its competitiveness in the "old" industries.

It will sink to the level of a technological colony and it will also have its standard of living sink, first relatively and then, in the long run, absolutely. This threatening fate of technological colonization can only be avoided by a coherent industrial strategy on a grand scale. It would have to be linked with a strategic policy of cooperation with Japan and America, and it would have to make trade and direct investment a two-way street. A comprehensive strategy of this sort, which is the direct opposite of the present isolated ad-hoc measures, has to be developed jointly by industry and the government. Its task would be to change the structure of our economy in the direction of building-up an information economy and society.

In the final analysis, a strategy for the high-tech industry has to be a European strategy, with special emphasis on joint development and implementation with France and Italy. But first we Germans have to know what we want. Presently, Germany, in its ignorance of the new high-tech realities and the new Japanese reality, is blocking the industrial political debate in the EC.

France: Reduction in Number of Electronics Patents Recorded

93BR0053 Paris ELECTRONIQUE INTERNATIONAL HEBDO in French 1 Oct 92 p 6

[Article by Raphael Font: "Historic Drop in Electronics Patents"]

[Text] The recession is also having an effect on patents for electronic inventions with respect to France: Registrations (from all over the world) dropped noticeably in 1991, after many years of growth.

As annual statistics just published by INPI [National Industrial Property Institute] show, 1991 was a mediocre year for electronics patents.

For the entire "physics-electricity" field, the total number of patent applications within France and from Europe with France as a designated country (applications which are not necessarily of French origin but which relate to our territory) dropped by 5.8 percent last year, whereas a 9.2-percent increase was recorded in 1990. "A decrease has been observed in all fields," noted Robert Ilcinkas, INPI chief engineer and an electronics specialist. "Over the last few years, there had been steady increases. The 1991 decrease is clearly linked to the economic crisis."

In the INPI statistics, the "electronics and computing," "measuring techniques," "control/regulation," and "monitoring, signaling, and display" sectors have fallen respectively by 0.7 percent (+15 percent in 1990), 7 percent (-0.3 percent), 10 percent (-5.5 percent), and 2 percent (+5.9 percent).

In the "audiovisual and communications" field, the decline is even greater: -9.5 percent in 1991, after substantial increases in all previous years (for example, +17 percent in 1990). Last year, INPI recorded 837 patent registrations in "recording" (against 957 in 1990) and 463 in "digital transmission" (against 527). The whole "television" field was apparently stagnant last year (1,000 registrations against 1,009 in 1990), after substantial regular increases for several years: 617 registrations in 1986; 649 in 1987; 732 in 1988; and 745 in 1989.

Patent Applications Up 50 Percent in Road Traffic Control

The same phenomenon is apparent in "semiconductor devices": 839 registrations in 1986; 904 in 1987; 1,207 in 1988; 1,246 in 1989; 1,432 in 1990; but 1,407 last year. In certain "physics-electricity" sectors, the drop is even more spectacular: -52 percent in resistors, -68 percent in modulation, etc.

Having said this, given this generally rather depressing picture, a few technical fields continued to grow last year, somehow or other: digital calculators (1,760 registrations against 1,658 in 1990) and their memories (341 against 296); the "coding and decoding" sector (156 against 136); temperature measurement (+29 percent); traffic control, which leaps ahead by 50 percent....

Mr. Ilcinkas observed, "With respect to traffic control systems, 85 percent of registrations concern road traffic. More than one-third describe systems for giving instructions or information to motorists. Around 50 percent of these systems use a receiver in the vehicle. Anticollision systems are also an important focus of interest. They are often based on the principle of detecting the distance between vehicles. Some applications describe devices for detecting passing vehicles, for example induction loops or optical detectors."

Another significant increase is that of Samsung Electronics, which last year made 97 registrations in France, against 78 in 1990 and 45 in 1989; the major South Korean group is thus, year after year, reaching new levels in the international hierarchy of major registrants of electronics patents.

French Electronics Output in 1992

Volume Changes in French Output	1988	1989	1990	1991	1992(e)
Professional electronic and electrical equipment	**2.6%**	**6.0%**	**-0.5%**	**-3.2%**	**-0.5%**
Components	5.6%	4.3%	-0.4%	-12.9%	1.0%
Electrical equipment	8.0%	6.9%	3.7%	-0.1%	0.0%
Electronic equipment	-1.6%	6.0%	-2.7%	-4.1%	-2.9%
Telephone equipment	-5.0%	1.0%	-1.4%	1.5%	0.0%
Computing and office equipment	2.7%	7.2%	-2.6%	-4.1%	0.0%
Household equipment	**2.0%**	**2.1%**	**2.8%**	**-1.5%**	**1.2%**
Household appliances	4.8%	-1.2%	-2.1%	4.7%	1.9%
Consumer electronics	-2.4%	7.5%	10.5%	-9.9%	0.0%

Source: *Economic and Financial Studies Department of the Credit Lyonnais bank.*

[Caption] In 1992, French electronics output is expected to stagnate. There is a decline in the electronic equipment sector as a result of cuts in armament expenditure. The telephone equipment field is experiencing a drop in orders. The computer and consumer electronics sectors are stagnating. Slight progress is expected for components and household appliances.

German Firms, EC Officials Differ on EUREKA Policies

93WS0056A Landsberg PRODUKTION in German 29 Aug 92 pp 1,2

["Is EUREKA Irrelevant?"]

[Text] Landsberg—For the time being, there will be no more money flowing out of EUREKA registers to German researchers. The irritant and reason for this financial holding action on the part of Brussels's EC bureaucrats is an alleged competitive advantage on the part of German projects resulting from their haste to market their products. Despite the need for cooperative European research, is the EUREKA initiative, which had originally been praised as flexible and unbureaucratic, now nearing its end?

Since the start of the EUREKA initiative in 1985, the German Federal Republic has participated in roughly 150 projects, involving about 200 companies and 55 research institutes. Germany shares with France the foremost place among the member states. Projects with German participation to date have involved a total financial volume of about 6.8 billion German marks [DM]. This volume includes the private and public contributions from all the countries participating in the projects. The German share in these projects to date is about DM2.2 billion. Companies, including many smaller ones, are now working on almost all the important long-term projects and have often assumed a leading role in them.

But the structure of the EUREKA initiative, which had originally been praised as flexible and unbureaucratic, seems to have suffered in the seven years of its existence. Its dynamism appears exhausted. Bureaucratism and inertia seem to have won the upper hand when one considers the definition of "basic research worthy of subsidies" held in Brussels and Bonn. In plain English it means that Brussels accuses the German government of seeking competitive advantage and practicing subsidy politics with respect to the use of subsidies. This has reached the point where, for example, the Lambda Physik Company of Goettingen has had to appear before a court as a participant in EUREKA Project 205 "Excimer laser" on the charge that the subsidies the company had received "had been clearly used to prepare for the introduction of a new Lambda laser on the market." The final consequence of this incident was that, until such time as an acceptable explanation is forthcoming, absolutely no more money will leave Brussels.

Last month the second industrial partner in this particular project, Rofin Sinar, likewise withdrew from EUREKA and now finances its work solely out of its own pocket. This is but one case, but it is like so many others in EUREKA projects that they have now become commonplace. Dr. Friedrich Bachmann, director of the excimer laser project at Rofin Sinar Laser GmbH, comments: "The market that Rofin Sinar is most active in, namely, industrial production, in our view requires an excimer laser in medium power range with an extremely high degree of availability, a well thought-out service plan, and a simple user interface. These requirements have to take priority. In order to get on the market at the opportune time, we have chosen to cooperate with our American partner Cymer Laser Technologies and, based on this strategy, are now concentrating entirely on marketing these products and developing them further. Consequently, we have been forced to remove ourselves from the development goals of the EUREKA project."

The institutes with their subsidy shares of up to 75 percent will remain however. Unfortunately, with the withdrawal of industry they stand to lose 25 percent of their funds since they are obligated to invest one-fourth of their R&D expenses in the free market economy in order to receive their total budget. Thus, dissatisfaction is spreading in the industry because the outlays are large and the subsidy share is low (with a maximum of 40 to 50 percent). No company will now undertake another project simply because there is EUREKA money. On the other hand, in the face of the rapid developments in laser technology, it pays to stay apace. Naturally, this situation is very difficult for small companies because their risk factor is so great. Consequently, it is to the advantage of the small companies to continue to participate in EUREKA projects in order to spread out the risk. Moreover, such companies benefit from access to the basic research in the field through the institutes. Nonetheless, in the final analysis there must also be a product that meets market requirements, otherwise industry's participation would make no sense at all, and we would again be back with the Brussels's bureaucrats and their appeal to the Rome Agreements of 25 March 57, calling for free competition in Europe. And these gentlemen attribute too strong a market orientation to the German projects, as a result of which "a high level of support would distort market competitiveness."

The Association of German Engineers (VDI), which developed the German Ministry of Research and Technology (BMFT) support program, has, in the meantime, issued a "letter of intent" for some projects, which, however, includes a requirement for repayment as soon as Brussels restores the support monies. Thus, project participation depends on the venturesomeness of the participants.

Aside from money, other problems seem to arise in and between companies working within the framework of the Common Market. Some of the companies participating in EUREKA are in direct competition with each other, and the market is no longer large enough for everyone. Eventually one or the other, or several, will be forced out. The participating companies know this and are therefore hesitant to share detailed information with other project members.

In view of these problems, has EUREKA any future at all? Professor Doctor Horst Weber, director of the Berlin Solid State Laser Institute and scientific coordinator of

EUREKA Project EU 226 in Germany, views the situation realistically: "Europe can only make further progress through international research. EUREKA projects are important and should help in the removal of economic barriers and in the merging together of the individual national markets. We need new stimuli for European self-assertion and confidence in world markets. Bureaucrats must be prevented from meddling. In addition, the various national requirements for financial support have to be better coordinated. Administrative problems, too, have to be reduced, but that is probably wishful thinking."

Development is becoming increasingly rapid and more expensive. No one country can manage alone. The newly planned research project "diode-pumped solid state laser," for example, will be many times more expensive than the DM40 million that the EUREKA solid state project has cost to date. Europe has to work together if it wants to stand up to Japan. And as a side-effect, it is certainly equally important that doctoral candidates and graduate students, for example, make international contacts as quickly as possible through these projects, and eventually convert European thinking into cooperative action.

Netherlands: Philips Manager Calls for New Industrial Policy

93BR0057 Amsterdam COMPUTABLE in Dutch 9 Oct 92 p 3

[Text] The Hague—Prof. Dr. Wisse Dekker, former president of Philips and currently chairman of the supervisory board of the Eindhoven electronics concern, is strongly urging a new industrial policy.

There should also be a specific corporate or technologically oriented policy in addition to a general industrial policy. That would mean that the government would have to make choices, and that requires political courage, the STAATSCOURANT quotes Dekker as saying. His point is that strategic industries should remain in the Netherlands.

Dekker appeals for the establishment of a Council for Strategic Industrial Policy, in which groups of commercial businesses and educational and technical and scientific institutions could work together with the government. This Council would take the form of a partnership of public and private groups to bring together insight, knowledge, entrepreneurship, and capital.

Dekker further expressed surprise that the new budget only has a short section devoted to the European dimensions of an industrial policy. He said he missed the policy statement that an increase in the European technology budget should not be at the expense of the national technology budget.

Official Criticizes Lack of Research in Eastern Germany

93WS0066B Duesseldorf HANDELSBLATT in German 22 Oct 92 p 6

["Spaeth Fears the Creation of Work Without a Future"]

[Text] Handelsblatt, Wednesday, 21 October 1992, bos Berlin—In the opinion of the chairman of the board of Jenoptik GmbH Jena, Lothar Spaeth, the current policy of establishing businesses in eastern Germany is heading in the wrong direction. Primarily, those companies receive support that are able to turn out a marketable product as soon as possible. However, without investing in research and development, these companies will be facing survival problems in about three years time.

British Engineers Criticize Government's Civil R&D Funding

93WS0094A London INTERFACE EUROPE in English Sep 92 p 4

[Article: "More Spending Needed on R&D, Says Engineers"]

[Text] Britain is not spending enough on civil R&D, according to the Institution of Mechanical Engineers. In a short but pithy Statement issued in July, the Institute highlighted what it called ... "a lack of substantive support for small and medium sized firms in securing European R&D funds." Overall, the effect has been that fewer small firms are involved in European networks than is the case in competitor countries." The Institution also points to the lack of an effective technology transfer network to promote innovation on a regional basis.

The Institution submitted a draft of its Statement on R&D to the top management of over 50 companies covering a broad range of the various industrial sectors in which technology-based firms operate. The final Report incorporated the views and recommendations which emerged.

Competition...

The Statement gives facts and figures to make its main point, which is that the UK R&D is lagging behind its international competitors. Government aid has been declining and has been directed disproportionately towards the electrical/electronics sector, the Statement said, adding that, the low and medium R&D-intensive industries receive a mere four p.c. of government R&D support ... "thus exaggerating the situation of poor competitiveness in much of British manufacture." The UK does well in the number of its scientific publications, but is failing ... "to carry forward scientific pre-competitive concepts through development to manufacture."

... and Pre-Competition

On the subject of pre-competitiveness in general, the Institution says that "lack of funding for 'near-market'

projects affects engineering research particularly adversely. Worthwhile engineering research often becomes 'competitive' long before the subsequent development can be confidently predicted to make a good return on investment. Also, by its applied nature engineering research often lies on the boundary between the 'pre-competitive' and 'near-market' definitions." The very terminology is found to be unhelpful by some companies, the Statement points out. Support should be based not so much on market definitions, but ... "on an assessment of the benefits likely to accrue to fields of applications."

The Institution recommends that public support for R&D and training should be increased, particularly for small companies, and the government should fund specific programmes to support R&D in the SMEs. Industry bodies such as the CBI should set up and support a unit to help small companies to approach the EC Commission for R&D funding. Government should fund and support near-market place and demonstration R&D projects.

This well argued and to-the-point Statement may be obtained free from: Research and Standards Department, Institution of Mechanical Engineers, 1 Birdcage Walk, London SW1H 9JJ. Tel: 071 222 7899.

EC, Political Leaders at Impasse Over R&D Funding

93WS0094I Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 12 Oct 92 pp 1, 3

[Article: "Euro R&D Push Stalled"]

[Text] A row has broken out in Brussels over the amount of money Europe should set aside for research and development over the next five years. At loggerheads are officials of the European Commission (CEC) and politicians.

The officials wanted to increase R&D expenditure on a year-by-year basis until by 1997 the annual budget would have reached ECU4.2 billion—double the amount budgeted for 1992. But Economics and Finance Ministers meeting in Brussels at the end of September refused to approve the scheme. They want spending to be kept at current levels. And that effectively means a serious cut-back in Europe's R&D programmes, the officials warn.

The entire five-year budget is still being negotiated and is not due to be approved until December.

The Finance Minister's meeting coincided with a report issued by EC Research Commissioner Filippo Pandolfi that assesses the EC's research strategy over the next five years. But Pandolfi admitted that the strategy was based on the increase in funding requested by the Commission and would have to be scaled down depending on the final budget decision.

The overall strategy includes nine specific research programmes on information and communication technologies. It also included specific programmes on industrial technologies, the environment, life sciences and technologies, energy and co-operation with central and East European countries.

The European Commission is adamant that the EC's R&D activity needs boosting. According to statistics produced by Pandolfi's department, the EC has a much lower level of R&D spending than its two major competitors. In 1991, the United States spent 2.8 percent of gross national product on R&D and Japan spent 3.5 percent compared to only 2.1 percent in the EC. The average annual growth rate for R&D expenditure in real terms has been 7.4 percent in Japan, compared with 4.6 percent in the United States and 4.1 percent in the EC.

CORPORATE ALLIANCES

Eastern German-U.S. Microelectronics Venture Awaits Finance Ministry Approval

93WS0006C Duesseldorf VDI NACHRICHTEN in German 4 Sep 92 p 6

[Interview with LSI Logic's European president, Horst G. Sandfort, by Jens D. Billerbeck; date and place not given: "'We Couldn't Have Done It With California Managers'; LSI Logic Negotiated for a Share in Erfurt Microelectronics for Two and a Half Years"]

[Text] Munich, VDI-N—When it was a question of enabling the former GDR's microelectronics industry to survive, the chip-manufacturing company, LSI Logic, based in California, was among the first to play an active role. Horst G. Sandfort, the president of the European division of LSI, in an interview with VDI NACHRICHTEN expressed the view: "The negotiations were far more complex than usual because the situation has permanently changed in the course of time." But now, the only thing missing for them to be able to go into production in Erfurt is the green light from the finance minister.

[VDI-N] Can you say something by way of introduction about the development of your involvement in Eastern Germany?

[Sandfort] Our eastern involvement actually began two and a half years ago. With the first contact and within the framework of the opportunities provided by their transitional government, those managers then occupying exalted positions contacted U.S. companies. It was management's intention to buy technology in order to update their plants. At that point LSI reached agreement with Washington that the 1.5-μ technology would be released for such a plan. Thereupon, we made an offer and this

offer was sealed by a contract between the then-existing enterprise, Ermix, in Erfurt, and LSI Logic. Then the political and economic developments linked with them took another turn and the ownership of these enterprises passed into the hands of the trusteeship. Then the trusteeship offered to let us maintain our existing contract if we were to change it so that we would actively participate in the privatization of this enterprise. We agreed to that. According to American law, the most sensible form for an involvement like this is a share of up to 20 percent since only the extent of the participation has to be disclosed on the balance sheet, not the return produced by the share.

Then came the condition, through another decision of the board of directors of the trusteeship, that this particular company should switch to an overall solution plan—the MTG [Microelectronics and Technolgy, Inc.]. Then we further actively cooperated on this too and attempted to work out the plan for a solution with them. It had been practically drafted, but then it was turned down in that form by the states in which the individual plants were located. Then at some point the idea of a joint solution was once again dropped. So, after two and a half years, here we are, bach where we started from. Now, the only thing still lacking is the final approval of the Finance Ministry.

[VDI-N] So you negotiated with the enterprise, you negotiated with the trusteeship, and also with the State of Thuringia. Were thesenegotiations that turned out differently than when you negotiate similar terms with a [private] firm?

[Sandfort] The negotiations are in any case far more complex than is usual among business partners. And, to be sure, because the situation has permanently changed in the course of time. The authorities have tried to take a permanent view of the new situation and with it negotiate new terms as well.

[VDI-N] And this holds good for the way the market is structured in the East, where we can no longer speak of a market at all.

[Sandfort] That is the most difficult aspect of the whole venture. We were originally interested in tackling market connections in the East and developing them into long-term relations. That's over and done with. The real trading and contract partners of the former GDR enterprises are themselves in the process of radical change, are being adapted to market economy concepts, and the whole basis for financing, the whole trading system, as it used to exist is no longer functioning.

[VDI-N] I assume that you are hoping for concrete results from participation in the enterprise in spite of this?

[Sandfort] We can now either set our course for the West and say: Can what is available there in terms of ability and know-how be of use in the West? Or can we in the long run hope that the enterprises in the former Soviet Union will recover in some form in their new surroundings and look for trading partners again?

I think it's possible to create a company in Erfurt that has a raison d'etre. We must not, however, dream of occupying leading positions in world markets, but create a supplier that has a modern, interesting portfolio of products and processes. A company with a sales volume on the order of DM200 million is realistic and with one of that size we can certainly bring such a venture to the break-even point in from three to five years. At the present time we don't yet want to talk of big profits, especially when we consider the fact that scarcely any semiconductor company in the world is at present chalking up positive figures.

[VDI-N] How many jobs are you talking about there at the moment?

[Sandfort] If you take a look at the trusteeship statements, barely 500 jobs will be retained in Erfurt.

[VDI-N] And these employees, are they actually workers from the new federal states, local workers, or are very many of them to be transferred from the West to the East?

[Sandfort] As concerns the employees, hardly any at all. The basic competence of the workers is high. So, if we assume that there are 500 workers, maybe 20 percent of them will come from the West to bring with them to key positions their relevant know-how. The rest of the workers have been trained so that we'll be at the ready if things go that far.

[VDI-N] Will it be just a production plant or will you also be designing and developing products there?

[Sandfort] To start with, we had wafer production ready to go there. It is operational and we're quite satisfied with the results. The first thing we have to do now is to introduce products and there's nothing faster in the conversion process than to produce ASICs [application-specific integrated circuits] for customers. The appropriate designers for this are available on the spot and they aretrained as well. Furthermore, we're working on collaboration with the so-called centers for microelectronics applications that have been set up in Thuringia.

[VDI-N] A little while ago we were talking about the long period of two and a half years that it took to conclude the negotiations. Did you have any difficulties in making them understand in the United States where such long-term commitments without concrete results are not necessarily the rule?

[Sandfort] I would put it this way: If we hadn't for the whole time deployed a team especially assigned to this mission, a team that had only one concern: to develop this connection, we would never have succeeded. Fortunately, since we have former Europeans in the general management of our parent company, we at least had no difficulties of any kind during these initial talks in discussing political problems as well. I can imagine that,

if we had had a purely Californian management, this affair would never have turned out as it did.

[VDI-N] Can you describe what sort of role the trusteeship played in connection with this?

[Sandfort] I have no cause for necessarily criticizing the trusteeship. What has to be accomplished there is phenomenal. The deployment of top people in executive areas is enormous. The executives were sometimes in continuous action 24 hours a day, seven days a week. Incidentally, the fact should quite simply not be ignored that behind the scenes, from the local administration to the federal government, they tried to introduce structures by means of laws and ordinances that are designed to counteract the first few signs of criminal attempts to make a fast buck here. Throughout the whole process, however, many things had to be connected one behind the other and could not be organized in parallel fashion, as is today usual in industry. Thus, time after time we had to wait for someone who was not yet involved in the hierarchical chain. But I'm certain that, since all of the participants are capable of learning, the complex enterprises that are still to be privatized in the future can profit from this.

[VDI-N] A somewhat provocative question to conclude with: Two and a half years have now passed. Based on your experiences during these two and a half years, would you today once again take the step that you took then?

[Sandfort] For business reasons, I wouldn't do it again. As a citizen and a European, I would seriously consider whether we did not have a contribution to make to the politically changing background. And in that context you could certainly approach me again. However, I am, on the other hand, disappointed with how little a commitment the European companies were prepared to make with respect to this—also in the cooperative sense.

Ciba-Geigy Buys Rhone-Poulenc Polymers Division

93WS0011C Paris COMPOSITES ET NOUVEAUX MATERIAUX in French 17 Sep 92 pp 7, 8

["Rhone-Poulenc Sells Its Polymers to Swiss Ciba-Geigy"]

[Text] At the end of August, Rhone-Poulenc sold its high-performance polymers to the Swiss group Ciba-Geigy. The earnings of this branch of activity represented 72 million French francs [Fr] in 1991, and Ciba-Geigy anticipates that it will reach Fr76 million this year. The high-performance polymers are used in the manufacture of high-range printed circuits as well as for composite parts intended for aircraft engines. For Rhone-Poulenc this sale fits into its policy of focusing on activities involving technical plastics and polyamide fibers. After having freed itself of Gazechim and sold its Rhovyl subsidiary at the beginning of the year, Rhone-Poulenc continues the transfers of assets. For its part, Ciba-Geigy affirms its good position in the world of polymers.

CORPORATE STRATEGIES

German Institute Study on Semiconductor Market, Industrial Policy

92WS0775A Duesseldorf HANDELSBLATT in German 13 Aug 92 p 16

[Article by Siegfried Grass: "Semiconductors—Ifo-Institute Expects Keen Competition on the Surging European Market for Components—Reliable Supply Seems to be Guaranteed"]

[Text] In its recent study on the "Importance of a European Semiconductor Industry for the Competitiveness of the Industry as a Whole And in Particular Microelectronics as an Application Industry," the Info-Institute in Munich reached a definite conclusion: "Political intervention on behalf of German or European semiconductor manufacturers is not required." This confirms the basic political attitude of the Federal Ministry for Economic Affairs (BMWi) towards industrial and economic policy. On the other hand, the researchers in Munich reached a conclusion which is completely different from an earlier study for the Federal Ministry for Research. This brought forth the following comment from Riesenhuber's ministry: "Poor report done as a favor" (HANDELSBLATT, 12 Aug 92).

After all, millions of subsidies from the Federal Ministry for Research are at stake which were paid primarily to Siemens to develop the megabit project. Were it necessary at all, does the JESSI project (the European research and development program for the technology of systems integration on silicon basis) still need to be supported with tax money if it does not seem necessary anymore under the aspect of industrial and economic policy?

It was not Siemens, but Hans-Olaf Henkel, CEO of IBM Germany who supported a strong European semiconductor industry as late as April. "If we now fail to gain a technological lead, the production of memory chips in Europe will be gone forever." However, he made this statement before the threefold alliance between IBM, Siemens and Toshiba had been announced. This cooperation is the result of long-term relationships among the companies. IBM and Siemens are already cooperating on the production of 16 megabit DRAMs and are jointly developing the 64 MB DRAM.

In another joint venture, IBM Japan and Toshiba are manufacturing flat color monitors for computers. In addition, the two firms entered into an agreement in the field of so-called "flash memories." Toshiba and Siemens have been working together in many semiconductor technologies since the eighties, including the 1 Megabit DRAM.

With the alliance announced in mid-July the three leading international companies want to implement extremely advanced chips in the field of semiconductor technology with extremely high memory density which will be the technological standard far beyond the turn of the century. Tsuyoshi Kawanishi, Executive Vice President of Toshiba, is very happy "to be a partner to an agreement which makes possible a free exchange of the expertise which has been developed."

Does this do away with concerns as they were voiced, for instance, by Konrad Seitz in his much discussed book "The Japanese-American Challenge—German High Technology Companies Fighting for Their Lives"? In its recent study Ifo asks the question differently when it evaluates the importance of microelectronics on the economy as a whole: Are subsidies needed for manufacturing integrated circuits, since other products and technologies are also important for the gener al economic development? In view of the environmental problems, for instance, the success of manufactured products may depend on how compatible they are with the environment and not on the power of the semiconductors used.

Therefore, Ifo wants to expand the question: How important is microelectronics for technical innovations and how important is it for the modernization of the production facilities? After all, integrated circuits are used not only in information and communication products (office machines, data processing and telecommunication equipment, entertainment electronics), they are also used indirectly—through their use in measuring and control products—in many products of the capital goods industry (e.g. machines, vehicles, energy producing and distributing equipment, household appliances).

Therefore, the manufacturers of other products may indeed depend on the progress of electronic semiconductors when they develop new products, and this would not result in equivalent returns for the chip manufacturers. According to Ifo, external effects are a legitimate reason for government subsidies—but only when the domestic economy is excluded from the progress. Although Japanese companies dominate the memory chip market segment this has not resulted in any known bottlenecks or dependencies so far.

Philips, Siemens and Thomson are heading the list of European suppliers. With European sales totalling $3.55 billion, all major European semiconductor manufacturers supplied about one-third of the European market in 1990. With $2.85 billion the major U.S. firms are of similar importance for the European market. About 15 percent of the market is supplied by factories which are controlled by Japanese companies.

However, Japan has a strong competitive position when it comes to the most important industries using integrated circuits. The main users, i.e. the manufacturers of office machines, EDP equipment, telecommunication devices and electronic entertainment devices, have an even stronger position compared to their European competitors than the manufacturers of electronic semiconductors. With the exception of EDP equipment, trade with the United States shows a similar pattern. The relatively strong position of American production of EDP equipment is based on the American lead when it comes to logic components and microprocessors, i.e . the products required for a computer.

The European position is more favorable when we look at the important user industries in the field of measuring and control technology, signal and safety technology and automotive electric and electronic technology. Therefore, Ifo reaches the conclusion that Japan's strong competitive position is a consequence of the competitive position of their user industries. Spurred on by the success in entertainment electronics and office machines, Japan became the leading manufacturer of integrated circuits. According to Ifo, it seems that a semiconductor industry can flourish only when there is a strong electronics industry which uses semiconductors.

From this vantage point, it may have made sense to build a strong semiconductor production with government help in Germany, because now Siemens can present itself as an equal partner in the alliance with IBM and Toshiba. Even if this meant a step towards a certain monopoly in the semiconductor market, at least German industry would not be left out. With the current market conditions the government aid programs cannot be justified in retrospect. The reliable and affordable supply of important component products seems assured; there is a large number of suppliers, there are no strong dependencies in geographical terms, and there is intense competition among the suppliers. Ifo sees no risk of a monopoly in the European semiconductor market, because at present there are more than a dozen major suppliers. Since worldwide sales of these companies are usually much larger than European sales, Ifo assumes that other companies could step in immediately should one of the suppliers discriminate against its European customers with regard to semiconductor deliveries.

Finally, there are a few semiconductor manufacturers which have not had a strong presence on the European market. These include not only IBM and Digital Equipment, which so far have produced almost exclusively for their own consumption given previous market conditions. There are also major Japanese and Korean suppliers who are not yet active in Europe.

According to Dataquest figures Japanese companies dominate more than 80 percent of the market for memory chips of the latest generation (1 MBit and 4 MBit). Still, they cannot escape the massive price pressure which is caused in good part by the competitive attitude of the Japanese electronics companies among themselves.

According to Ifo, even if other major manufacturers such as Samsung (Korea), Texas Instruments and Intel (both United States), Siemens (Germany), SGS-Thomson

(France/Italy) would stop producing modern memory chips, there would be no monopoly situation in the markets for memory ICs because of existing competition among the Japanese manufacturing groups. Referring to known investment projects (see table) the economic researchers in Munich list nine major suppliers who want to sell state-of-the-art electronic components from European production to their European customers.

The European production facilities, which have been in operation since 1980, are all factories able to produce integrated circuits with the finest structures possible now. According to Ifo, the manufacturing facilities are an exact copy of manufacturing companies abroad, with Hitachi in Landshut as an example.

Since the obstacles against an entry into the market become increasingly larger, tendencies towards a monopoly will still develop. This is another argument brought forward by proponents of government support. They claim further that the high cost of developing a new generation of chips and the manufacture of integrated circuits require large investments. The manufacturing processes are considered to be so complex and difficult that a new generation of integrated circuits does not seem possible without the experience in producing previous generations. Finally, they say that only the initial innovators will be able to recapture the development costs with an adequate return on investments.

This theory of stable hierarchies among the suppliers does not hold true for the past. A comparison of the ranking shows major shifts in recent years. Ifo counts NEC, Toshiba and Hitachi among the upcoming firms. Texas Instruments and Philips have become less important. In 1990, the major suppliers had a lower market share than in 1984 or 1979. Despite the fact that investment requirements in R&D and production are rapidly increasing from one chip generation to another, smaller suppliers were able to enter the market in the eighties and even grow faster than large semiconductor producers.

If this should no longer be possible in the future, Ifo contends that they would be free to enter into cooperative agreements and strategic alliances of any kind. Certainly, other companies will follow the example of IBM, Siemens and Toshiba.

Investments in Semiconductors by Non-European Companies

Parent Company	Country	Sales 1990 million $ Total	Sales 1990 million $ Semiconductors	Construction of Wafer Factories in Europe since 1990[1]) Location (Country)	Start of Operations	Investment million $
ITT	USA	2,500	371	Freiburg (G)	1991	[2])
Harris	USA, 3,099	800	Devon(GB)	1994	260	
Samsung	Korea	45,042	1,315	Wasserburg(G)	1991	[2])
Mitsubishi Elect.	Japan	21,228	2,319	Alsdorf (G)	1991	370
Texas Instruments	USA	6,604	2,574	Avezzano (I)	1990	1,200
Fujitsu	Japan	17,975	2,880	Newton Aycliffe (GB)	1991	710
Intel	USA	4,125	3,171	Dublin (IR)	1993	490
Motorola, USA	10,885	3,694	East Kilbride (GB)	1991	150	
Hitachi	Japan	50,686	3,893	Landshut (G)	1992	241
NEC	Japan	24,391	4,898	Livingstone (GB)	1991	60
DEC	USA	13,085	[3]	Queensferry (GB)	1990	160
IBM	USA	69,018	[3]	Sindelfingen (G)	1991	310

[1]—incl. planning; [2]—not known; [3]—production for in-house use only—Source: Dataquest, Ifo

Electronic Component Suppliers on the European Market

Company	1990 Sales in billion U.S.$
Philips (NL)	1.1
Siemens (G)	1.0
Thomson (F/I)	0.9
Motorola (USA)	0.8
Texas Instr. (USA)	0.6
Intel (USA)	0.6
Toshiba (J)	0.5
NEC (J)	0.4
Nat. Semic. (USA)	0.3
AMD (USA)	0.3
Hitachi (J)	0.3
Daimler Benz (G)	0.3
GEC (GB)	0.2
Samsung (Korea)	0.2
Fujitsu (J)	0.2
Harris (USA)	0.2
Mitsubishi (J)	0.2
ABB (Switzerland)	0.1
Ericsson (Sweden)	0.1

Source:Ifo; Dataquest, May 1991 Copyright HANDELSBLATT-Grafik

Siemens: Rough Road Ahead for New CEO

93GE0001Z Duesseldorf WIRTSCHAFTSWOCHE in German 25 Sep 92 pp 156-158, 161, 163

[Article by Wieland Schmitz: "No Fun At All: What Siemens's New CEO Heinrich von Pierer Is Facing. Without Its Sizeable Net Interest Receipts, Earnings Would Be Halved. Even So, Returns Already Moderate"]

[Text] Heinrich von Pierer likes to speak in similes. The Semiconductor Division is like a "marathon runner with a lead weight"—a delicate circumlocution for annual losses of up to three-quarters of a billion German marks [DM]. The new Siemens CEO, who takes over the boss's chair from 64-year-old Karlheinz Kaske on 1 October, will undoubtedly have to drag this weight around for some years to come.

This is true despite the fact that von Pierer has already taken steps to make the runner lighter and therefore faster. Thus, the decision to reduce personnel by a full 15 percent bears solely the 51-year-old's signature, even though it had already been decided upon prior to the staff change at the top level of Siemens. Von Pierer, who has been deputy executive director for over a year, likewise had a decisive role in another decision: He opposed the construction of a new chip factory costing billions and advocated focusing the Semiconductor Division on the more lucrative logic components, thereby foregoing the in-house mass production of memory chips, which, up to then, had been regarded as technically necessary.

The new policy on semiconductors is only one example of the course that the new man will steer in the future. After the frantic expansionist policy of his predecessor, Kaske—which was expensive beyond all expectations—von Pierer now must first of all consolidate. To be sure, the executive board under Kaske had also constantly decreed rationalization programs, but his successor will turn the heat up a few degrees. His goal: to drastically increase the company's profitability. Strict cost management has been announced—and not just for the two big money-losers, semiconductors and Siemens Nixdorf Information Systems AG (SNI). All business areas, even the profitable ones, are to do their part. Von Pierer: "We are thinning down every division." There is, after all, no part of the world electronics market where the competition is not becoming stiffer and the margins are not shrinking.

The entire value-added process is now coming under scrutiny and that will produce, according to von Pierer, an "entirely diffent cost reduction potential" from previously, when, for the most part, plants were examined individually in regard to their performance. The general inspection will result in a lowering of the amount of in-house fabrication throughout all divisions. Areas of work will be spun off, included in joint ventures, or even sold.

Target for net profit on sales for the entire company: 4.0 to 4.5 percent. An ambitious performance goal, since, in previous years, this figure, a combination of annual surplus and sales revenues, has oscillated around 2.6 percent. For the business year now ending (30 September), the Siemens auditors at Munich headquarters on Wittelsbach Platz estimate an annual surplus of around DM1.9 billion on total sales of DM80 billion—which only results in about 2.4-percent profitability. This profitability will only be achieved because the net interest receipts and trade surplus from the approximately DM20 billion in liquidity that was amassed under Kaske are contributing fully half of the pretax profit. Deutsche Bank research analyst Guenter Dielmann: "Profit quality has declined perceptibly." What von Pierer's austerity measures can mean for personnel policy—particularly in a crippling recession—is being calculated by many of the 415,000 Siemens employees on their SNI personal computers: Up to 30,000 fewer jobs—a figure which is being officially denied. What is certain, however, is that von Pierer must get rid of ballast—and as much of it as possible early on in his tenure in office. Von Pierer: "We must slim down." And the process of personnel reduction is already in full swing today. The company has—adjusted for acquisition of firms—economized on 7,000 jobs from October 1991 to June 1992.

Doubts about the ability of the new Siemens boss to impose his will are hardly appropriate. The native of Franconia—civil in manner, conciliatory, and possessed of greater-than-average persuasiveness—is tough as nails

in this regard. In addition, he has the backing of the company's president, Heribald Naerger, as well as of the other most powerful men on the central executive board: finance chief Karl-Heinz Baumann and company planner Hermann Franz. Franz, furthermore, is regarded as Naerger's successor.

A look at the totally different profit contributions by the individual divisions shows what—to some extent—enormous negative earnings Siemens has to carry. The Public Communications Networks Division, which makes a considerable contribution to overall profits, apparently does excellently. Yet it is precisely this business that may come under strong pressure in the coming years. Chief Managing Director Hans Baur, who is responsible for this division, knows that the boom which was touched off by the new laender and which gave Siemens sales of nearly DM13 billion in business year 1991/92 and dream profits of 9 percent, will not continue. It will also become more expensive to guarantee a reasonable share of the worldwide mobile telephone market. In the United States, where the division is still purchasing its share growth by running in the red, the break-even point is not expected to be reached until 1994.

Things are already looking bad in another showcase division of the highly diversified electronics company: The decline in margins for the Medical Technology Division—with around DM7.5 billion [in sales], the worldwide leader in the field by far—has accelerated as a result of weak markets and increased Japanese competition. In 1991/92, net yield will barely be 1 percent. Here, too, von Pierer is applying the brakes to costs: In the coming business year, 1,800 of the 31,000 jobs to be eliminated worldwide [will be in this division].

The Private Communications Systems Division—also a leader in the world market, with sales of a good DM5 billion—has considerable weak areas as well: While European—and especially German—business is producing profits, year after year, huge losses are being incurred in the United States. The purchase of IBM subsidiary Rolm proved to be a pit for hundreds of millions of marks. The stagnating market and Japanese vendors, such as Toshiba, who are catching up rapidly are applying pressure to the Siemens telephone manufacturers, under Peter Pribilla, who can come up with a net profit of just 1 percent. Thus, it is precisely the two world market leaders in the Siemens family that are demonstrating that size is no guarantee of success.

The Semiconductor Division, led by Managing Director Juergen Knorr, (DM2 billion in sales) and SNI, under Hans-Dieter Wiedig, (DM13 billion in sales) are big losers. Both of them together may burden overall performance with a loss of around DM1.3 billion in the business year which is ending. The commentary by an analyst of the British brokerage house, S.G. Warburg: "These two divisions are caught up in problems that are clearly more serious than generally recognized." Thanks to Kaske's entry into chip technology, which is a loss-producer, Siemens is, to be sure, the last European bastion that can hold its own internationally in silicon technology. Kaske, however, tolerated mounting losses as a result of the enormous outlays and negative margins involved in the sale of chips for far too long. The Warburg experts expose further problems in a recently published study of the company: Not only are memory chips responsible for the losses, but also to some extent the logic components (the so-called ASICs [application-specific integrated circuits]), which are based on the same technology and are offered in a vast array. Now, according to Warburg, "this Augean stable must be cleaned out" as well.

For all that, Kaske did do his pet project an important service: In February of this year he capped previous cooperative arrangements in research and development and production with an historic three-way alliance, involving Siemens, IBM, and Toshiba, for the development of chips. In this way, the division, which is intensively engaged in research and development, will be able to save much money in the coming years.

The Warburg analysts are also most critical of Siemens Nixdorf Information Systems AG: Under the present management, it is "totally unclear as to how long it will be until the break-even point is reached," according to the study. In view of so many failures, it is no wonder that SNI Executive Director Wiedig is being subjected to ever-greater pressure. Meanwhile, over and above the already planned reduction of 3,000 employees by 1995, the decision has been made to eliminate 6,000 additional jobs. One analyst expressed the criticism that a policy of "appeasement" towards the frequently mystified "special mentality" of the people in Paderborn had prevailed at SNI for far too long, and inadequate leadership qualities had allowed motivation to dwindle away in many divisions. In addition, SNI has not yet succeeded in creating a standardized product line.

Wiedig was not alone in this with his mistaken assessments. The central executive board under Kaske, which approved the takeover of ailing Nixdorf just three years ago, also imagined that the merger would have been simpler. Strategist Hermann Franz: "We underestimated the problems." In any case, the Warburg experts see the Nixdorf acquisition as "the most expensive way" of entering the supposedly lucrative UNIX market with its operating systems independent of manufacturers.

Von Pierer must economize, but that alone is not enough: He must once and for all make the still domestically oriented company a global player. Now that Kaske has been able to establish the most important Siemens divisions in the United States at great expense—the latest being via the Sylvania takeover by Osram—Southeast Asia is now on the agenda. At present, only 5 percent of Siemens sales are made there. The declared goal is to double them within a few years. Von Pierer: "Southeast Asia is growing at rates of 10 percent annually." All division executive boards have

received instructions to investigate their market prospects in Thailand, Indonesia, Singapore, the Philippines, South Korea, and Taiwan. Apparently, Siemens has learned something: The acquisition of firms is the lowest priority in its Southeast Asian strategy and will only be accepted if the division directors can credibly calculate in advance that the acquisition will yield a profit from the very beginning—such as in the case of the Sylvania purchase a few weeks ago. Said one manager: "After Rolm and Nixdorf, the central executive board has almost no desire at all to acquire additional companies."

[Box, p 158]

Telecommunications: The World Versus Siemens

Even the fattest cash-cow in the Siemens Company has to defend its pasture with all its might. To be sure, the Public Communications Networks Division is the third-largest vendor of switching and transmission technology in the world—ranking behind the American giant, AT&T, and the French firm, Alcatel—but even here the competition is becoming steadily fiercer.

The division, which delivers 62 percent of Siemens's profits, was long labeled strictly a "government supplier." In the meantime, it has also become one of the largest on the international scene. In turn, new competition is threatening the domestic market. In the medium term, AT&T boss Robert E. Allen wants to vigorously expand foreign business, which, up until a few years ago, amounted to almost nothing. His newly appointed overseas representative, Randall Tobias, is setting the goal: "We want to make up to 25 percent of our sales outside the United States in 1995." In particular, Tobias has his sights set on the EC countries, which, with the Internal Market in 1993, will be liberalizing the awarding of contracts by their post offices.

Telecommunications companies from Canada, Sweden, and Finland are also competing with Siemens. In many cases they are breaking into the EC market through acquisitions, joint ventures, and collaborative efforts. So it is, for example, that the Canadian firm Northern Telecom, which has already stormed and seized AT&T strongholds, following the liberalization of the American market, wishes to repeat its success in the Old World. In 1991, Northern Telecom chief Paul G. Stern acquired the British firm STC. To this was added, in July of this year, a 40-percent share in the communications division of the French firm Matra, in which Siemens was likewise very interested. In February, Stern joined with Motorola in order to participate in mobile telephones as well.

The Finnish company Nokia would also like to play a leading role in mobile telephones. Following the takeover of the British firm, Technophone, the company can now regard itself as number two in the world cellular telephone business. The Swedish company Ericsson, which has established itself in Aachen with a full-fledged research and development laboratory, is pushing its way into the same market. Ericsson wishes to achieve sales in Germany totaling DM1.5 billion within a few years.

Pierre H. Suard, president and CEO of SEL majority shareholder Alcatel, can consider himself to be the world champion of strategic alliances in the telecommunications field. Since late 1990, Suard has acquired the telecommunications branch of the U.S. company, Rockwell, Canada Cable & Wire, AEG's cable works, and has merged with the Italian firm Telettra. And, in the new laender, Alcatel has taken over the telecommunications operations of RFT in Stassfurt.

French Government Increases Impact on SGS-Thomson's Strategy

93BR0008 Paris ELECTRONIQUE INTERNATIONAL HEBDO in French 17 Sep 92 pp 1, 8

[Article signed J.-P.D.M.: "SGS-Thomson in Step With the Government"]

[Text] The appointment of Mr. Jean-Claude Hirel as president of CEA [Atomic Energy Commission] Industrie, the man who will henceforth be in charge of the French stockholders in SGS-Thomson, is an essentially political decision.

Last week the public authorities announced that CEA Industrie, in association with France Telecom, would assume control of the French stock in SGS-Thomson, an obvious step after the departure of Mrs. Edith Cresson. In addition, they also announced the appointment of Mr. Jean-Claude Hirel as president of CEA Industrie. Readers should recall that Mr. Hirel was manager of the DIELI [Electronic and Computer Industries Section] of the Department of Industry from the end of 1981 until the beginning of 1984; during this period he was "responsible for putting forward an industrial policy for France in these sectors." It should also be remembered that during this period Saint-Gobain and National Semiconductor were forced to dispense with their shares in Eurotechnique in favor of Thomson. To what extent will the appointment of Mr. Hirel influence SGS-Thomson's strategy?

SGS-Thomson: Toward Some Sort of Nationalization

CEA Industrie will be in charge of recapitalizing SGS-Thomson. The very political appointment of Mr. Hirel as head of CEA Industrie can be interpreted as the government's desire to intervene in SGS-Thomson's strategy.

The source of the crop of daily press articles last week on the subject of the new stockholders in SGS-Thomson was a press release from the Department of Industry and Foreign Trade dated 9 September. This press release announced a number of events of which we were already aware. For our part, we draw two conclusions from the way in which the text is written; on the one hand, CEA Industrie and its CEO, Mr. Hirel, will be in charge of recapitalizing SGS-Thomson. On the other hand, CEA

and, therefore, LETI [Electronics and Computer Technology Laboratory], which is a part of CEA, will henceforth be a separate entity from CEA Industrie, as they each have their own manager. "It has been decided that CEA Industrie, in association with France Telecom, will take over the French shares in SGS-Thomson [...]. The Thomson group, like the other shareholders, will continue to take part in the development of this company's activities." There are no surprises in this text; CEA Industrie and France Telecom are going to contribute to an increase in SGS-Thomson's capital, with CEA Industrie making the largest contribution and becoming the majority French shareholder. In the ordinary course of events, Italy's IRI [Industrial Reconstruction Institute] should follow the capital increase and maintain an equal share to that of the French block. England's Thorn EMI, currently holding 10 percent of the shares, should not follow suit, and neither should Thomson-CSF, currently holding 45 percent of the shares. As forecast, these two companies will become minority shareholders.

The press release continues: "This new structure will make it possible to reinforce technological cooperation between SGS-Thomson on the one hand and LETI and CNET [National Center for Telecommunications Research] on the other; these research laboratories belong to CEA and France Telecom, respectively." This is not easy to understand: CNET and France Telecom are already close partners in the SGS facility at Crolles; they could hardly get any closer. As for LETI, it belongs to CEA and not to CEA Industrie, two entities which are henceforth separate. Theoretically, then, CEA Industrie should not have any influence over LETI and its relationship with the semiconductor manufacturer. However, neither is there any reason for LETI to put a halt to the basic research that it was carrying out on behalf of the French-Italian company.

"Mr. Hirel... will be nominated as president of CEA Industrie." This sentence announces the severing of links between CEA and CEA Industrie: Previously, the latter had been managed by Philippe Rouvillois, general manager of CEA. Until now, the manufacturing sector has expected CEA Industrie to be a sleeping partner in SGS-Thomson, only intervening financially on behalf of the government (Minister of Industry Dominique Strauss-Kahn does not have a reputation for dictating to manufacturers what they must do). Mr. Hirel, however, has a reputation for interventionism. As CEA Industrie is not in any event a typical consumer of components, Mr. Hirel will probably follow a policy which, theoretically, should be an extension of the minister's aim: "That France should maintain its position in the components sector." However, this aim is sufficiently vague that an idealist could interpret it as: "We must produce memory or microprocessor chips," and a pragmatist as "We must manufacture products that others do not produce in order to meet our customers' requirements more effectively." So what will the new president of CEA Industrie want?

An Industrial Policy Without Resources

Mr. Hirel is a sworn enemy of Mr. Gomez, president of Thomson, which should not make it any easier for the shareholders to reach a consensus. What would happen moreover if IRI, the Italian shareholder, only partially followed the capital increase, and CEA Industrie became the majority shareholder? In any event, the minister has confidence in Mr. Hirel. The press release states: "The president of CEA Industrie will define, in consultation with the heads of Thomson SA and France Telecom, the level at which and the way in which CEA Industrie and France Telecom will intervene." If we read this correctly, it means that it will be Mr. Hirel who will define both the levels at which and the way in which the other French shareholders will intervene. This smells of nationalization....

We should add that the alarm apparent here and there in comments made on this situation seems completely disproportionate. What will the anticipated $500 million capital increase, a figure mentioned on several occasions, allow SGS-Thomson to do? A reduction in debt servicing of $50 million (Fr250 million) per year, an amount which should be compared with the yearly turnover of $1.4 billion. Unfortunately, this will not save the company: In one year, its share of the world market has dropped from 2.8 percent to 2.4 percent, a worldwide market loss of 0.4 percent, or $232 million. For every $1 of worldwide market gained, $2 must be spent; therefore, for 1992 $646 million, and not $50 million, would be needed simply to return to the 1991 position (to reach 5 percent of the world market, as Mr. Pistorio would like, would now cost $2,900 million over and above debt reduction). For SGS-Thomson, then, the situation still remains the same; they must make a pact with the "devil" (a Korean or Japanese company) and/or redirect their activities toward several market niches.

Germany: Volkswagen Foundation Presents 1991 Annual Report

93MI0040 Bonn TECHNOLOGIE-NACHRICHTEN MANAGEMENT-INFORMATIONEN in German 18 Sep 92

[Text] The Volkswagen Foundation has just presented its annual report, providing comprehensive information on its work, its current funding program, and the course of its business during 1991. The endowment funds amounted to around 3 billion German marks [DM] at the end of 1991, with investment income higher than ever before, at DM221 million: a DM9.3-million increase over the previous year's figure of DM211.8 million.

New grants amounted to DM159.6 million, compared with the previous year's DM203.1 million. To maintain the foundation's economic capacity, DM49.0 million was added to the endowment funds, compared with the previous year's DM45.0 million. At the same time, the withdrawals in anticipation of future income—to which the foundation resorted particularly in 1989 and 1990 to

enable it to react effectively to the changing circumstances of the German economy—were reduced by DM23.7 million, to DM35.3 million.

The foundation's funding program list featured 20 items at the end of 1991. Interdisciplinary Joint Engineering Projects (DM8.7 million), Photonics, Materials, Physical-Chemical Principles, Components and Integration (DM7.0 million), Microcharacterization of Materials and Components (DM5.2 million) took the lion's share, followed by Neuroimmunology, Behavior and Health (DM4.4 million), Postwar Germany (DM4.3 million), Environment: a Scarce Resource (DM4.2 million), Conversion of Economic Systems, and New University Chairs, each with DM4.1 million. If the total of DM94.9 million is broken down according to academic fields, the figures show that the humanities and social sciences received DM43.2 million (46 percent), the natural sciences DM25.0 million (26 percent), engineering DM18.3 million (19 percent), and the life sciences, including medicine, received DM8.4 million (9 percent).

France: Thomson-CSF Restructures

93WS0041C Paris L'USINE NOUVELLE in French 1 Oct 92 pp 52, 53

[Article by Sylvie Bommel and Jean-Pierre Jolivet: "Thomson- CSF, or Constant-Reshuffle Management"; first paragraph is L'USINE NOUVELLE introduction]

[Text] Does Thomson-CSF's constant reshuffling show a tremendous capacity for adaptation or a desire to keep things off-balance? The group's style is abrupt and its objectives mysterious. This leads its partners to consider it unpredictable.

Anywhere else it would be a profound restructuring. At Thomson-CSF, which has seen its share, the word used is "moderate." Yet the appointment of a third general director, the breakup of the company's special components branch (14 percent of its 45,000 employees), and new bosses in three of the five remaining businesses is no small housecleaning!

The new configuration, however, is just the latest in a long line for the subsidiary of the nationalized group Thomson. Thomson-CSF, the world's second-largest professional electronics maker, manufactures radars and military-communications and air-traffic-control systems, among other things. "It is change for change's sake," accuse the detractors of Alain Gomez, who was reappointed as the group's president in June. Critics maintain that the company's blurred organization reveals a wavery strategy. "On the contrary," explains an executive at company headquarters, "it is a feat for such a gargantuan organization to adapt so quickly without damage." Some labor unionists even give Thomson-CSF president Alain Gomez credit for upsetting the age-old management system without getting caught up in the weight of tradition. "But that's enough now," they explain. "Flexibility is good," chimes in a supplier overwhelmed by the constant changes, "but they're verging on chaos."

Thomson-CSF's unpublicized reorganization will reinforce his opinion. What is the point of assigning Thomson Tubes Electroniques to the aeronautic equipment branch (BEA), when Tubes was also cultivating outside customers as part of the components branch? Why play musical chairs with branch directors? What is the role of Henri Starck, the only general director whose job is not well defined?

There are many such questions, and answers to them are scarce. Elected members of the company's worker-management committee were the first to learn of the reorganization. But they were allowed to voice their opinions only in an official statement reprinted in the company newsletter. "The reorganization does not basically change the order of Thomson-CSF's missions, but [merely] adjusts its sense." Is that all?

Besides this terse explanation, many other factors combine to create confusion about the organization's foundations and stability. First is the way decisions are made, which is rapidly and sometimes abruptly. Thomson-CSF's style contrasts sharply with the caution shown by most big firms when penciling in new names on their organizational charts. On the contrary, Alain Gomez's motto seems to be "no sooner said than done."

As a result, reorganizations—which are rarely the topic of scuttlebut before they are officially announced—do manage to take people by surprise. Sometimes too much so. In a recent example, Thomson Sintra Submarine's managers explained to the worker-management committee that its components department was going to be combined with the special components branch. Three days later, everybody at Thomson learned that the components branch was going to be dissolved.

Another troubling aspect of Thomson-CSF's management is the role of its branches, which is unconventional and terribly open-ended.

Unconventional because they are not free to manage their finances independently, and because branch directors do not report directly to the president but to three general directors.

The role of two of them was just clarified during the reorganization. Daniel Rapenne, who has recently made general director, will handle competitiveness, and Bernard Cambier will be in charge of growth and results. This move to recentralize can be read as a shift away from meeting strategic challenges through decisions made at the branch level and based on branch specialties and markets. Instead, the focus will be on efforts that are common to all branches, i.e. boosting sales and productivity. It is up to the general directors.

This essentially transforms Thomson-CSF's branches into management structures, and fairly light ones at that.

With little room to maneuver in relation to their upper echelon, the branches are no longer comfortable with the divisions and other subsidiaries that comprise them, for the combinations are frequently reshuffled. The company's branches find themselves in the situation of team managers whose members are constantly coming and going. This does not make it easy to work collectively.

"Always keep in mind that we are just reclassifying activities from one branch to another, that's all. The shakeup is only skin-deep. It concerns only 1,500 people out of 45,000," explains a high-ranking executive with the group. But that is just the point: The surface is what everyone sees.

The way Thomson severs some of its employees is also unusual, and gives the company a no doubt exaggerated image of instability. Indeed, those who fall from favor do not receive kid-glove treatment. Disagreements or underhanded tricks lead to swift and even violent departures. Examples over the last few months include Vincent Piazzini, the general director of Thomson Components Microwaves, Roger Agniel, the general director of the special components branch, and Jean-Francois Briand, general director of Thomson-CSF. Several versions of Mr. Briand's reasons for leaving in October are making the rounds. All of them revolve around power struggles, which are common at this level, but which reach new heights at Thomson-CSF.

"There are 15,000 degreed engineers in the company. That is a lot of smart people. Consequently, they spend a lot of energy devouring one other. I know of few places where people hate each other so cordially," recalls a high-ranking employee. The fact that Alain Gomez is not one to be swayed by emotion, even when the person involved is close to him, adds to his killer reputation. For instance, one of his oldest friends, Martine Bidegain, has just left the group, where she was chief of human resources. Several managers had been insistently asking for her head.

Obviously, the high turnover of managers does not make for a solid and stable management team. Alain Gomez has been criticized for the fact in some very high places. Gomez can defend himself by pointing out that he does surround himself with company men. Indeed, Thomson-CSF's three general directors, Henri Starck, Bernard Cambier, and Daniel Rapenne, joined Thomson in 1961, 1959, and 1964 respectively!

Fairly or not, Thomson has a reputation as a company that perpetually moves its managers around. The image clings so stubbornly that, according to headhunters, the group now attracts only those with a taste for challenge and not for long-term strategy. Aware of the risks involved, candidates are demanding financial guarantees and golden parachutes.

Conversely, several recruiters say they think twice before "hunting" at Thompson. "Having Thomson-CSF on your resume is great for engineers who have stayed in the scientific and technical departments. Managers, on the other hand, are not very sought after. Management styles today tend more toward the friendly than the cowboy," says the head of a large consulting firm.

In 1990 L'USINE NOUVELLE published a study asking young engineers which companies they would like to work for. The survey turned up a curious phenomenon. Thomson ranks fourth among students in their last year of school, but is hardly mentioned at all by those who have been out in the work world. Word of mouth?

Indeed, Thomson's managers are concerned about the loss of motivation among the group's young professionals. An in-house study conducted with Sofres showed that they are happy to be working in a high-technology company, but have a very poor opinion of the management.

"What management says is no longer credible. We have heard so much we don't believe it any more. For the last two years, we haven't known whether or not our department will be sold off. It is hard to work well with a sword of Damocles like that over your head," explains a 40-year-old research engineer. The personality of Thomson's president, who has no taste for visiting plants and is thus rarely seen in any, does nothing to ease the malaise.

Finally, the group's outside partners are sometimes taken aback by what they see as its endless reorganization. The game of industrial Meccano started by Edith Cresson when she was prime minister undoubtedly heightened the confusion. Indeed, Mrs. Cresson planned to split the group in two. The consumer electronics (Thomson Consumer Electronics) and semiconductors (Thomson-SGS) businesses were to merge with CEA Industrie. As we have now known for a short time, Thomson will relinquish control only of semiconductors. But the announced plan increased the group's overall reputation for instability. "German employer organizations have distanced themselves from Thomson subsidiaries, because they consider the group too unpredictable," explains the head of a consulting firm in Berlin.

Thomson-CSF managers can observe the same anxiety among their associates at all levels. "But when the state is your main customer, you don't care about the outside world," comments one of them. The shift to civilian markets that is being forced on Thomson-CSF by the bleak prospects for weapons sales will probably force it to pay more attention to its image. And therefore to become more stable, at least in appearance.

France: Thomson-CSF To Reorganize Components Activities

93BR0051 Paris ELECTRONIQUE INTERNATIONAL HEBDO in French 1 Oct 92 pp 1, 3

[Article signed F.G.: "Thomson-CSF Reorganizes Its Components Activities]

[Text] Disappearance of the special components branch as a structure, merger of the semiconductor activities of TMS [Thomson Military and Space Components] and TCM [Thomson Microwave Components], incorporation of electronic tube activities into the aeronautical equipment branch.... Hit hard by the decline in military markets and faced with a price war on passive components, Thomson-CSF is undertaking a complete reorganization of its components activities. Are these the first steps toward selling off its activities by department, as various rumors suggest?

The Special Components Branch (1991 turnover Fr2.9 billion), under Jacques Vannier since November 1991, comprising subsidiaries TCM and TMS, Thomson Electron Tubes (TTE), Thomson Hybrids, CEPE and LCC, will disappear as a structure. The various subsidiaries are now directly attached to the general management (in particular to the new general manager Daniel Rapenne), except TTE, which falls under control of the aeronautics branch.

No changes for the other Thomson-CSF companies, in particular for SGS-Thomson. (Henri Starck will continue to represent the shareholders.)

The merger of the semiconductor activities of TMS (500 people specializing in silicon circuits for military and space applications) and TCM (400 people, hypercomponents and gallium arsenide signal processing), which was being considered in June, is now in effect. The new entity—its legal structure should be finalized by 15 October—is called Thomson-CSF Semiconducteurs Specifiques. The merger involves bringing together all commercial and administrative activities of the two parties at Orsay. (It is officially the absorption of TMS by TCM.) This streamlining operation will result in the elimination of 50 jobs, mainly at administrative and commercial levels, a move which will not necessarily lead to as many layoffs. The production sites at Massy (TCM) and Saint-Egreve (TMS and TCM for GaAs circuits in "Vitesse" technology) should remain unchanged. The drop in orders since the beginning of the year could, however, lead to a second round of layoffs; no figure has yet been put forward, but will be in the first half of October.

Daimler-Benz Group Announces Defense-Related Cutbacks

German Aerospace

93MI0051A Bonn DIE WELT in German
9 Oct 92 p 13

[Article by Ulrich Friese: "Tabula Dasa"—first paragraph is DIE WELT introduction]

[Text] German Aerospace (DASA) is to reduce its workforce of about 70,000 by more than 10 percent by the end of 1994 and there is talk of layoffs.

The law of averages is being confirmed depressingly for the Daimler-Benz group. After Mercedes-Benz and AEG, DASA has now announced the consequences of negative business trends. If the final collapse of the EFA-90 [European Fighter Aircraft] program, threatens, a further 8,000 to 10,000 DASA jobs will be lost.

Critics of the German defense industry may feel that their fears have been borne out. With serious cuts in store in Bonn for the once generously funded defense budget, the producers of military systems are resorting to desperate measures. They are estimating the associated job losses and evoking the drastic consequences that a mass exodus of development engineers will have on Germany as a sought-after "high-tech location."

The EFA-90 project is a topical example of the automatic impact that political arguments have on industry. If Bonn's Defense Minister Volker Ruehe does in fact scrap the supranational Eurofighter, about 15,000 jobs are likely to be under threat in Germany alone, and throughout the whole country, according to industrial reports.

It is not only the scrapping of the EFA-90 that would severely affect the 70,000 employees of the Bavarian Daimler-Benz subsidiary. In the previous year, orders from the ministry in Bonn had accounted for just under half the aerospace and defense group's total 12.4-billion German mark [DM] sales income. In order to reduce its dependency on the defense industry, which is generally in steep decline, DASA chief Juergen E. Schrempp had stepped up the expansion of the civil sectors (aircraft and engine construction).

On paper, he has already achieved his purpose. The incorporation of German Airbus in the DASA group inevitably reduced defense business from 49 to about 30 percent of DASA group sales, which have increased to DM18 billion. However, the drastic cost-saving measures being taken by public customers in both the civil and military sectors are now making a mockery of the structural improvements in DASA's business figures.

Against the background of DASA planners having to come to terms with an expected halving of their defense orders over the next five years, the figures that have now been announced for the planned job cuts would appear to be rather on the low side. The "Defense and Civil Systems" division will have to reduce its current 13,347-strong workforce by 2,750 by the end of 1994. DASA's Aviation division is far more severely affected by cuts: This sector, which includes both civil and military craft systems, must shed as many as 3,317 of its 33,100 jobs by the end of 1994.

If DASA and the three other partners in the "Eurofighter" consortium fail to submit proposals for the cheaper alternatives to the EFA-90 project for which the ministry in Bonn is pressing, the business outlook for the Daimler-Benz subsidiary will be particularly serious. By that time at the latest, the recently announced figures for planned job cuts throughout the group will have to be revised upwards. DASA's civil business, which benefits from public subsidies, is similarly threatened. The shedding of an estimated 500 of the total of 4,600 jobs in the "Space" division by the end of 1994 could be torpedoed by the outcome of the ministerial conference of the European Space Agency,

ESA, scheduled for November. The final cancellation of various mammoth projects is on the agenda for this meeting.

Should the Munich company's skeptical forecasts for its civil and military business come true, the DASA parent company Daimler-Benz would be hard hit. Group chairman Edzard Reuter's vision of forging an internationally competitive high-tech company would remain simply a pipe dream.

Dornier, MTU

93MI0051B Bonn DIE WELT in German 9 Oct 92 p 15

[Text] About 1,100 posts at the Oberpfaffenhofen subsidiary of Germany Aerospace (DASA) in Friedrichshafen will be affected by announced job cuts, reported spokesmen from Dornier and Friedrichshafen-based MTU, the Engine and Turbine Union yesterday. DASA had announced on Wednesday that up to 7,500 jobs would go by the end of 1994.

About 350 jobs at the MTU would be affected. This would amount to about 6 percent of the current total workforce of just under 5,500. The cuts would be achieved by "soft measures," such as early retirement and natural attrition, not by dismissals. At Dornier (just under 5,000 employees), about 770 jobs would be lost. Defense business would be the hardest hit, followed by aviation and then the space sector, said a spokesman, who gave no further details as to the individual proportions. Dornier, too, wanted to agree the cuts with the labor organization but said that dismissals could be ruled out.

Spain: Electronics Industry To Face Funding Problems

93BR0056 Paris ELECTRONIQUE INTERNATIONAL HEBDO in French 8 Oct 92 p 13

[Article by Didier Girault: "Spanish Electronics Industry in Difficulty"]

[Text] The Spanish electronics industry, submerged in an unfavorable economic climate and despite the introduction of a third national plan for the industry, is finding it difficult to keep its head above water, according to a report by the French Center for Foreign Trade (CFCE), published just before Expotronica. (Professional electronics, equipment, and components fair, Barcelona, 13-16 October.)

According to information contained in a report entitled *"Electronic Components: Perspectives in Spain"* written by the CFCE, Spanish electronics production is slowing down. This is because it is based on a very fragmented industrial structure, made up of 90 percent small and medium-sized enterprises (SMEs) which are limited to short-term projects due to lack of funds, and because it is increasingly unable to rely on public sector orders, which until 1990 represented 50 percent of business (Telefonica halved its orders in 1991). In 1991 Spanish electronics production (computers, telecommunications, consumer electronics, automobile...), which met only 28 percent of the country's demand, progressed by only 1 percent (against 10 percent in 1990). Furthermore, Spain has not succeeded in introducing a satisfactory industrial policy, despite the launching of three PEINs [National Electronics Industry Plan]. The last of these, PEIN-3, dates from December. This program, worth Fr2 billion over a three-year period, aims to promote key sectors and products (HDTV [high-definition television], software, complete information technology solutions, application-specific circuits, power circuits, sensors). In addition, as a result of the tendency of SMEs to group together, employment in the electronics sector has dropped by 11 percent (53,000 in 1991). However, the need for qualified personnel is still badly felt.

As for the balance of trade, there is a large deficit (Fr38 billion in 1991) due to the 1990 decrease in customs duties, which favored imports from other EC countries. The Spanish electronics market, which was number five in Europe in 1991 with a total of Fr81 billion, nonetheless dropped by 5 percent the same year. However, it still remains attractive, considering that it is generally underequipped, both in terms of enterprises (as well as in computers, where orders for equipment have been shelved) and private comsumers (in automobiles, for instance).

Telecommunications, Computers, and Automobile: Mainstays of Development

The progression of the Spanish electronics market is founded on three mainstays: telecommunications, computers, and automobiles. Representing some Fr18 billion in 1991, the Spanish telecommunications market obtained 67 percent of its supplies from domestic manufacturers. Today's liberalization of this sector, initiated in 1991 by the loss of operator Telefonica's monopoly (controlling 80 percent of public markets), is stimulating a greater opening of the Spanish market to foreign telecommunications equipment manufacturers. This market recorded losses of 17 percent in 1991 (against an increase of 34 percent in 1990). This was essentially due to the reduction in Telefonica's purchases.

Spanish Electronics Market

Year	Market	Change
1986	Fr45.5 billion[1]	-
1987	Fr55.2 billion	+21%
1988	Fr66.3 billion	+20%
1989	Fr79.4 billion	+20%
1990	Fr84.9 billion	+07%
1991	Fr80.5 billion	-5%

1. One peseta = 5.35 centimes.

[Caption] For consumer electronics, Spain remains a springboard for reexporting Asian products to EC countries. Indeed, Spain has not abolished the preferential system that benefits Southeast Asian countries.

Source: Amiel/ELECTRONIQUE INTERNATIONAL HEBDO.

It is a completely different story in the automobile sector. Although there is no national manufacturer, Spain is the third largest automobile producer in Europe and has benefited from Renault, PSA [Peugeot], Volkswagen, General Motors, Ford, Nissan, and Suzuki setting up production plants there. The country exports 70 percent of its production (1991 figures) and its domestic market has not yet reached maturity: 886,000 automobiles were sold in Spain in 1991, while experts estimate a potential market for some 1.4 million per year when the market reaches maturity. Notwithstanding, Spanish-based automobile makers are now making large orders for electronic components and subassemblies. For computer material (Fr25 billion in 1991), the 10-percent decline in the 1991 market is said to be due to the fact that buyers postponed investing, in anticipation of more complete solutions (hardware and software) than those currently on offer.

Purchasers of industrial computer technology solutions (a sector worth Fr9.7 billion in 1991) are investing in hardware and not software. The CFCE report anticipates an average growth rate of 25 percent in this sector of activity for the next four years.

In consumer electronics, Spain remains a springboard for re-exporting Asian products to other EC countries, which absorb 92 percent of such exports. It should be noted that the Spanish market for television sets represents 43 percent of the consumer electronics market.

Spanish SMEs launched modernization and renovation programs to upgrade their industrial control systems; the medical sector is becoming equipped with scanners, sophisticated sensor equipment, etc.... According to the CFCE report, this explains why the professional electronics market (defense, medical, industrial) progressed by 14 percent in 1991 to reach some Fr16 billion. This growth more than compensated for the decline in defense electronics, which fell by 2 percent in 1991, a victim to budget cuts decided by the Defense Ministry.

Indicative of the dynamics in all the previously mentioned markets, the Spanish components sector (worth Fr10.2 billion in 1991) experienced two successive drops in 1990 and 1991. According to information in the CSCE report, the market for passive components fell by 1.3 percent. For active components (Fr3.8 billion and -3.6 percent in 1991), the captive market for semiconductors is practically equivalent to the free market (Fr1.15 billion in 1991). The latter progressed by 8 percent in 1991. It only covers 40 percent by national production.

Spanish Semiconductor Market[1]

Segments	1989	1990	90/89	1991	91/90	Market Share
Consumer electronics	192.6 MFr[2]	256.2 MFr	+33%	264.3 MFr	+3.1%	23
Computers	139 MFr	82.4 MFr	-40%	66.9 MFr	-18.8%	06%
Telecommunications	387.9 MFr	318 MFr	-18%	327.4 MFr	+3%	29%
Distribution	345 MFr	313.5 MFr	-09%	307 MFr	-2.0%	27%
Others (Automobile...)	112.3 MFr	89 MFr	-20%	179.2 MFr	+101.3	15%
Total	1,176.8 MFr	1,059.1 MFr	-10%	1,144.8 MFr	+8.1%	100%

1. Captive market excluded

2. MFr = millions of French francs; one peseta = 5.35 centimes.

[Caption] Spanish electronics production (computers, telecommunications, consumer electronics, automobile) only covers 28 percent of the country's demand; it only grew by 1 percent in 1991 (against 10 percent in 1990), according to information contained in the report *"Electronic Components: Prospects in Spain*, published by the CFCE.

Source: CEES/ELECTRONIQUE INTERNATIONAL HEBDO

France: Alcatel Officials on Mobile Communications Strategy

93WS0057F London MOBILE EUROPE in English Aug 92 pp 33-34, 37

[Interview with M. Jacques Imbert, president of Alcatel RSD, and Dr. Peter Radley, its director of Mobile Communications, by John Nelson in Paris; date not given: "GSM Will Have a Very Long Life..."; first paragraph is MOBILE EUROPE introduction]

[Text] This month the MOBILE EUROPE interview focuses on Alcatel, one of the largest and most diversified companies in Europe's mobile communications sector. John Nelson (ME) travelled to Paris to discuss the company's activities in a dual interview with the President of Alcatel RSD, M. Jacques Imbert (JI), and its Director of Mobile Communications, Dr Peter Radley (PR).

ME: With the launch of France Telecom's GSM service a few weeks ago, this is an opportune time to ask about Alcatel's involvement, since your company is a prime supplier of base stations, terminals and switches.

Imbert: Well, as you know, GSM has been very late, and the explanation for that is quite simple. The basic GSM standards were established some years ago, and after that there were still a good many details to be finalized. GSM is a very complex system and everyone underestimated the amount of software which needed to be developed.

Also, you can't stimulate everything so some performance optimisation had to be done. Telecom has opened its commercial service and SFR is about to do so; Alcatel is heavily involved with both. We also have an involvement with the DBP D1 system. So all in all, GSM is a busy area for us.

ME: Under the interim type-approval procedure, do you see yourselves having to recall large numbers of terminals for modifications later on?

Imbert: We have been very careful in this area. A mass recall of terminals would create a major problem for suppliers, and it could also create problems in marketing terms for both the suppliers and their customers if you asked for terminals to be returned for modifications [passage illegible] basic strategy was not to be the first in the market—which is why we will be launching our mobile GSM terminals at the end of this year, and our hand-held terminals early in 1993. This doesn't eliminate the risk, of course, since final type-approval will not be available for anyone until the end of 1993, but it will be a good compromise. I suppose that it's nice to be first in any market, but GSM will have a very long life and this is only the very beginning of it.

ME: Can we now talk on the subject of PCNs. What is Alcatel's view of them? The fashionable European view is that the UK has got it wrong, but would you agree with that judgment?

Radley: It's a common misconception that PCN is somehow technically different from anything else, but it isn't. The first point to make is that the raw commodity which is licensed is a piece of spectrum, and that spectrum will be utilised by a variant of GSM called DCS1800. The differentiation which we'll see is simply in style of service, by which I mean how a service will be provided to the customer. There have been a lot of suggestions that portable telephones of one sort or another—forget the frequency they're working at, it doesn't matter—will be big business by about the year 2000. Some estimates reckon that half of all the telephone calls made by then will involve a radio link of some sort, but such a large number of calls couldn't possibly be supported by the spectrum available at 900 MHz. Most cellular operators would agree with that, and most countries agree that they will have to open up 1.8 GHz—not just for political reasons as in the UK, to create some competition, but for capacity reasons. The two existing cellular operators in the UK are limited to 900 MHz; they don't have any licences for 1.8 GHz, so it follows that they will run out of the capacity to address a real mass market as and when it develops. So there's certainly a position in the market for those UK operators which are licensed to use 1.8 GHz. I think the real question is the transition strategy, and the dynamics of the market in that transition. Here in France, both France Telecom and SFR are being very careful about the transition from analogue to digital, and indeed it's a problem which all cellular operators have who are currently offering analogue services and are shortly to offer digital. Take Vodafone in the UK. They've adopted a particular strategy in the development of their business; they've adopted a certain architecture, tariffing structure and so on and given it a name, which is MCN. Other operators will find other ways to do it. There's also the issue of how the new operators will compete from Day One. One thing is for sure, however; by the latter part of the 1990s, if the market grows as everyone seems to think it will, neither Cellnet nor Vodafone in the UK will be able to address the mass market because they're limited to 900 MHz only.

ME: That sounds like another way of saying that the German government has got it right by taking the view that 1.8 GHz will be used for something called E1 which is another digital cellular system by another name and nothing to do with PCN.

Radley: Yes, absolutely. That's why I try to correct the use of the label PCN, and it's why I tried just now to be very specific about what the UK PCN licences are actually for.

ME: Yes, but isn't PCN one of those designations which can mean whatever you want it to mean?

Radley: Indeed it is. What matters most in my mind is the user; I think users are likely to get very confused if we're not careful, and as a matter of fact I think we've confused telecommunications users enough over the years. We've confused them by providing technology that's led to services which are not easy to access and use...

ME: Like CT2?

Radley: The really important point is that CT2—and DECT, for that matter—are merely radio sub-systems, not networks, whereas the GSM specification is a network specification. GSM is a holistic approach: you can argue that it's more complex than it needed to be, but the fact is that it's a whole network standard, which gives you a lot of control and a lot of transparency for all sorts of additional services which aren't available through CT2 or DECT. The other point about these is that they are basically not intended for extensive handover or continuous coverage—they are designed for discontinuous-coverage situations. As you've implied, these are fine for some applications and for some people but digital cellular is the best solution for continuous coverage. I suppose one reason why one might choose CT2 is that terminals are smaller and cheaper but it's only a matter of time before that changes. Fundamentally, there's no reason why a GSM or a DCS1800 terminal will not tend towards having the same price as a CT2 terminal has now.

ME: My best guess is that CT2 will find its [word illegible] as either a cordless PABX application or as a replacement for CT1. I can't see public telepoint systems doing especially well in Europe since the feedback I keep getting suggests that the public wants something a bit

more sophisticated. There seems to be a general feeling that the ability to take incoming calls would be nice.

Radley: Well, you can with CT2, of course—you can have automatic registration. But that comes back to the network issue. What the telepoint operator's licences in the UK do not allow is the provision of two-way calling; in France, the regulators haven't been quite so restrictive. The technology allows automatic registration, but you have to have a network lying behind the base stations which does something with the information. That's what's not been allowed to be done with CT2. Again, it's a radio sub-system but to do the things that a customer wants, it has to be connected to a network. There is no CT2 network defined in the specification, whereas there is with GSM because GSM is a network standard. The CT2 standard just defines a radio interface between handset and base station. It's up to regulators to produce the right scenario to provide a service that customers want.

ME: M. Imbert, could you say a little more about Alcatel's overall GSM strategy?

Imbert: Well, first of all Alcatel wasn't strongly involved in analogue cellular except in France. We realized four or five years ago that mobile communications were going to become extremely important and that it would not be very long before the difference between a fixed and a mobile telephone subscriber would all but disappear—you won't know whether a subscriber is mobile or fixed, in other words. We made a strategic decision to become involved and to take advantage of the change from predominantly analogue to digital systems. And we were and are very well equipped to become involved. Our total R&D spend for the last few years was about ECU100 million and it will be about the same amount for the next few years as well, which is about 12 percent of our turnover. We have been quite successful in Germany, France, Australia—which incidentally was the first order outside Europe for GSM and we are also very close to decisions in other European countries. In fact we have an imminent order from an Asian country, but I'm afraid I can't tell you which one. The characteristic of our strategy is to take the view that GSM is a total network specification and that therefore we are involved in the whole of it—switches, databases, terminals, base-station controllers, everything. Only Ericsson has the same approach as us in this area. It's a big advantage, although of course the customer can order equipment from various companies if he wishes. Some people have commented that only a company which is experienced in the production of items for the consumer market can make a big impact with GSM but we don't think that's going to be the case for at least ten years.

ME: Why is that?

Imbert: There are several reasons. One is that many of the ASICs are common to base stations and terminals. Another is that terminals are very complex and contain large amounts of software and a lot of proprietary parts. Yet another is that from the marketing point of view, it's important to have an image—to be a large telecommunications company is a great asset in this market.

ME: Do you see a large influx of GSM terminals from the Far East?

Imbert: Oh yes, undoubtedly the Japanese will be strong and take a good market share, that's obvious, but we'll be in a very good competitive position.

ME: Can we turn to the topic of LEOS [low earth orbiting satellites]? I know that Alcatel is heavily involved in Globalstar, although I'm sure that Iridium has rather a higher public profile.

Imbert: Maybe we are more conservative than they are! As a matter of fact, my view is that Iridium is something of a PR tool to promote the name of Motorola. In the long term there's no doubt that satellite technology will play a major role in mobile communications. In the shorter term, Iridium and other LEO systems are complementary to terrestrial systems but they're not competitive with them. We actually feel that Motorola made some mistakes. Firstly, they planned a very large and complex system with communications between satellites and so on—as I'm sure you know, Lockheed has opted out of launch provision. The second mistake was to plan the system as a completely self-contained entity which bypassed all the public network operators. We have defined Globalstar quite differently. It uses very simple satellites with no communication between them and takes advantage of the existing infrastructure—so the satellite is an extension of the terrestrial infrastructure. This is a good deal more economical, of course, and it also leads to a partnership with network operators. Having said that, the future for Iridium-type LEO systems is very difficult to determine at present. To amortise the development costs you need a world-wide application, which in turn means that you need approval from all the PTTs involved. I rather suspect that gaining that might be quite a difficult process. There are also a lot of commercial, regulatory and administrative problems to solve. The weight of the terminal is a big issue, as is pricing—will people accept it? Oh, and by 1997 or 1998 the whole of Europe will have a GSM infrastructure in place so the available customer base will be quite limited.

ME: There's clearly a technical case for LEOs because you can't cost-effectively cover 100 percent of a nation with terrestrial stations. Are you saying that for Alcatel, Globalstar is a natural extension to your GSM system?

Radley: Absolutely. It comes back to the separation in my mind of radio sub-system and network. Globalstar represents another radio sub-system which interfaces with a network; as Imbert explained, our philosophy is essentially to use what amounts to a flying base station as an extension of a digital cellular system. In Europe that would be GSM-based; in the U.S. it could be digital AMPS or possibly CDMA, and it might be something else again in other countries such as Japan, for instance.

The point is that you have to have a satellite system which can be used right around the world, so you need a transparent base station which can be used with a variety of different modulation techniques. To obtain any kind of cost-effectiveness, you've got to have that sort of system. Motorola had to go high-profile in the sense that they were trying to catch the eyes of the politicians with what they thought would be rather an attractive technological solution in order to become a world operator. That seemed to be their objective, at any rate, and to achieve that you need to go high-profile. We are very close to all our customers around Europe and elsewhere, and our approach has been rather more sotto voce until now. We've had discussions with a number of European operators on complementarity of the Globalstar approach with their fixed-network approach, and a number have said, in effect, "well, that's very interesting because now I can see ways of providing total coverage across my rather sparsely populated country." There are countries which have coverage problems in various parts of Europe, and Globalstar is a neat complementary solution which doesn't threaten their existing network. I think that there will be very great regulatory difficulties in Europe when it comes to permitting a global operator to have use of the spectrum over their territory, but Globalstar can be most things to most administrations. It doesn't have on-board switching or transmission between satellites, so they're simpler and cheaper—the satellites are in a higher orbit so they don't need so much fuel to keep them on station. It all leads to cheaper satellites, which in turn means lower costs to the potential subscriber.

ME: I often think that the average businessman confronted by GSM, DECT, CT2, telepoint, etc., just throws up his hands in horror and says look, I just want to make a phone call. Is it on some level because the market is technology-led rather than customer-led?

Radley: Well, at least partly. I think the industry has been dominated by engineering since its inception. That probably didn't matter too much for the majority of this century, but recently there's been so many opportunities for engineers because of the explosion in technological evolution. We've created some very good things but we've also created confusion for the customer. What we have to do is work out how we harness the technology for the benefit of customer. ISDN is a fantastic example of engineers spending lots of time developing something which was very bright and shiny and sexy for them but has really been of little value to the end user, so far.

ME: M. Imbert and Dr. Radley, thank you.

Germany: Bayer To Open Factory in Eastern Laender

93MI0059 Bonn DIE WELT in German 13 Oct 92 p 16

[Text] Less than 18 months after Federal Chancellor Helmut Kohl promised Bitterfeld's chemical workers that production would continue there, a western German chemical company has ventured into the region. Yesterday, as agreed last April, Bayer began moving into central Germany's chemicals triangle by laying the foundation stone for the first of four new factories on a 53-hectare site adjoining that of Chemie AG Bitterfeld-Wolfen.

Around 750 million German marks [DM] are to be invested and about 750 new jobs created. Speaking at the ceremony, Bayer chairman Manfred Schneider referred to a "feat of strength," which the company had found no easy matter. The laying of the foundation stone was "an outstanding event for the economy," according to Werner Muench, Minister-President of the Land of Saxony-Anhalt, and Trust Agency President Brigit Breuel.

From the middle of 1994, four factories will open at Bayer Bitterfeld GmbH at three-month intervals. The company's lacquer resin and cosmetic manufacturing capacities will be expanded with new factories, while Bayer will also combine, modernize, and expand its European self-medication output, for instance aspirin, in a new pharmaceuticals factory. Bayer Bitterfeld will also accommodate the long-planned expansion of Bayer subsidiary Wolff Walsrode AG's methyl cellulose capacity.

Bayer decided in favor of Bitterfeld, according to Schneider, "because we regard contributing to eastern Germany's recovery as a major responsibility for our company." Goodwill alone was not enough, however: Around 40 percent of the investment costs are being paid out of public funds, development costs being borne by the host land and the local council, and the Trust Agency underwriting any old liabilities.

"Bayer's made sure all round it won't have to pay a cent for site development or reclamation," says Guido Scholz, Reppin Council's real estate administrator. Bayer is building on farmland and green sites that used to be owned by the council, as these were the only ones available so soon, he maintains: Reppin sold the land to the Trust Agency for DM5 per square meter, a total of DM2.5 million for the entire 53 hectares, and the Trust Agency in turn resold it to Bayer at DM20 per square meter, although for this sum it is also underwriting old liabilities. "No more difficult than a forceps delivery," is the metaphor that Trust Agency board member Klaus Schucht uses to describe the negotiations with the chemicals group.

Nevertheless, Scholz welcomes the new factories, though he would have preferred the company to reclaim existing industrial sites rather than building in the green belt. "Before Bayer arrived on the scene, we were laboring under a negative image," he says. "We shall be no better off with the industry on our doorstep and the poison still in the ground. We need to attract industry to pay for site reclamation."

France's Cisigraph CAM Software Firm Up 2.6 Percent in 1992

93WS0062A Paris PRODUCTIQUE/AFFAIRES in French 5 Oct 92 p 2

[Article entitled: "Cisigraph Continues to Grow in a Glum Market"]

[Text] Cisigraph was created in 1985 to develop and market CAD/CAM machine software. The firm has continued to grow in a tough economy, and has announced a 2.6-percent increase in sales for fiscal year July 91-June 92 (196 million French francs [Fr] against Fr191 million). It has also expanded its customer base 21 percent since the same period last year, to 850 customers, 400 of them international. Moreover, its added-value figure is up 8 percent, from Fr138 million to Fr148 million. Actually, the fact that Cisigraph sells its products through distributors partially masks the company's real position in its market. Outlets, subsidiaries, and distributors generated consolidated sales of Strim 100 and associated services that totaled Fr260 million, a figure that has been climbing steadily for the last few years. Cisigraph has opted to step up its strategy of seeking agreements with manufacturing and data-processing partners to develop, market, and distribute its products. Last May it signed an accord with Sollac to design and develop a product that will facilitate and optimize the use of steel in the manufacture of deep-drawn pieces. (Sollac is a Usinor Sacilor subsidiary that specializes in producing and converting steel.) Likewise, Cisigraph's partnership program with Toyota helped it develop and incorporate industrial-style functions in the Strim 100 software program. "The group has consolidated its growth abroad (Europe, North America, and Asia) by expanding its distribution network and buying into companies, and will continue to do so," indicates Robert Bellue, Cisigraph's president. Mr. Bellue adds that in a market that has doubts about its future, his group did not blink at investing 25 percent of its sales in R&D. We should point out that the Japanese firms Sumitomo Corporation and Sumisho Electronics hold 15 percent of Cisigraph's capital—the result of efforts underway in Japan since 1990 to expand distribution of the Strim 100 program. The German group BMW holds 31 percent.

Cisigraph (Robert Bellue)—Les Bureaux du Parc, Le Griffon, 536 Route de la Seds, 13127 Vitrolles, France. Telephone: (1) 42.89.93.23.

France: Dassault Faces Bleak Future

93WS0062C Paris L'USINE NOUVELLE in French 8 Oct 92 pp 22, 23

[Article by Jean-Francois Jacquier: "How Can Dassault Survive?"; first paragraph is L'USINE NOUVELLE introduction]

[Text] Customers are scarce, the air force's piggybank is empty, and the firm seems to lack a strategy. Some would like to marry it with Aerospatiale; others have the Germans in mind.

The outlook for Dassault Aviation is bleak. The export markets of the Mirage maker are shutting down one after another, and the company is now taking the fallout from the reduced lifestyle of the French Air Force. Dassault is finding it more and more difficult to remain profitable. The situation is so bad, in fact, that only the company's settlement of its dispute with Greece may keep it out of the red this year.

The firm has steadily clipped its wings (see table) for six years now, shrinking from 16,000 workers in 1985 to fewer than 12,000 today. Dassault was expected to announce a new plan to cut 840 jobs on Tuesday, 6 October. And for the first time, its brainpower—that is, the engineering and research departments for which Dassault is renowned—has been significantly shorn, losing 200 of a total of 1,930 slots. Further downstream, the procurement (129 job cuts) and equipment (341) divisions are also bearing the brunt of the layoffs.

This was enough to resurrect questions about the future of Dassault Aviation. Should the military aircraft maker be saved by combining it with a group like Aerospatiale, more broadly diversified in civil products thanks to Airbus? The debate was thought to be moribund since Edith Cresson's departure from Matignon. Defense Minister Pierre Joxe has just revived it by citing the "restructurings needed to form strong national concentrations, particularly in aeronautics." "Aerospatiale is not doing any better. Its management has been asked to hold off on implementing a layoff plan much bigger than Dassault's because of the referendum on Europe," contend trade unionists, as if to exorcise the threat of a shotgun marriage with the national company run by Louis Gallois.

Like it or not, industrial and economic forces are at work. Even an overturning of the majority in the National Assembly would not necessarily benefit Dassault, which increasingly faces its competition alone. The French state, which holds 45.76 percent of the company's shares, can no longer carry the group at arm's length. Like others in the missile, space, or defense-electronics industries, Dassault has little chance of escaping the inevitable Franco-French recombinations.

Concentrations Are Being Formed

Besides, such concentrations are already in place or are being formed everywhere in Europe. It happened in Italy, with the creation of Alenia; in Germany, where Daimler-Benz integrated nearly all aeronautics activities long ago; and in Great Britain, where authorities are thinking about putting whatever is left of an ailing British Aerospace under Marconi's wing. These moves are a prelude to other transnational groupings. The question is whether, when the time comes, Dassault will still be enough of a player to sit down at a European table.

Serge Dassault has certainly made some significant efforts to rationalize the company since he took over as president in 1986. He has closed four sites, specialized factories, reined in spending, pared staff, and improved design and manufacturing lag times by making more widespread use of CAD/CAM. Yet his efforts were not enough, given the dramatic situation he inherited. In 1987, for instance, Serge Dassault was forced to close the Sanguinet (Gironde) center, which was being used to manufacture wooden furniture for the company!

"Not long ago," lament the unions, "state orders and research enabled us to employ 10 people where five would have sufficed." Those days are gone. Dassault must now finance a substantial share of its military programs, which still account for 70 percent of its business, itself. As it happens, customers are not beating down its door. Dassault is a victim of disarmament, the Americans' new export aggressiveness, and the rise of the Russians, who are prepared to sell their Migs at bargain-basement prices for a handful of foreign currency. The company has not won a foreign contract for nearly six years. Worse, it has just seen the Americans snatch away three European deals—in Switzerland, Finland, and Greece—one after another. And although Dassault still nurses some hope, it has a slim chance in Taiwan now that George Bush has consented to General Dynamics's sale of 150 F-16 fighters to nationalist China. Dassault's salespeople are running up against the same problems everywhere: France's loss of influence in the world, and prices that are 20 to 30 percent higher than those of their rivals across the Atlantic, whose production runs are four times bigger.

Yet the firm, which is gambling that the launch of its new Rafale will help it rebound near the turn of the century, has not yet hit bottom. Now domestic military orders are failing. Of course, there are still 127 Mirage 2000s to deliver, but for budget reasons Dassault does not expect to take any new orders until the Rafale comes out. Moreover, the contract for industrialization of the new program, expected to be signed this month, must escape challenge. Bonn's decision to shelve the competing EFA project and the Germans' recent—but how real?—interest in the Rafale is stirring more fears than hopes at Dassault. The economic climate is also compromising plans to diversify into luxury Falcon business planes and space products. If the decision to abandon Hermes is confirmed, Dassault will see 10 percent of its sales over the next few years go up in smoke.

Like Renault in its time, the Dassault symbol is wavering. Especially since, in modern combat planes, it is no longer the airframe maker but the avionics and weapons-system manufacturers who play the leading role. Avionics and weapons systems now account for 40 percent of a plane's value. And Dassault, which has alway put all of its eggs in the state basket, finds itself without any real strategy. The question now is whether Aerospatiale or another of its partners will be able to compensate for that shortcoming.

Six Years of Slackening Speed

	Sales*	Profits**	Staff	Layoff or Industrial Plans
1986	15,602	293	15,783	
1987	15,545	192	14,676	Closure of the Melun-Villaroche site (flight testing); Layoff involving 1,261 jobs
1988	17,661	146	13,818	Closure of the Boulogne (wings), Istres Usines (Mercure), and Sanguinet (wood) sites; GMA sites absorbed into Poitiers and Seclin
1989	17,359	295	13,385	Elimination of the Toulouse-Colomiers (Alpha Jet, Atlantique) site; Creation of Dassault Space Center in Toulouse
1990	17,119	218	12,390	
1991	14,353	103	11,914	Transfer of the Saint-Cloud prototypes shop to Argenteuil; Three-year plan to cut spending 30 percent
1992	6,470 (first half)	May be losses	Down	Tertiary sector reorganized (283 jobs cut in greater Paris). A new plan to eliminate 840 positions.

The collapse of the Soviet bloc, aggressive American competition, and France's loss of influence... Dassault has not won a military export contract for nearly six years. It is also a victim of the reduction in the defense budget. As a result, planned expenses are shrinking, and despite efforts to adapt, Dassault's accounts may be in the red for the first time.

*In millions of French francs; **In Fr millions, after taxes and reserves.

Porsche CEO Discusses Turnaround Strategy

93GE0064B Duesseldorf WIRTSCHAFTSWOCHE in German 30 Oct 92 pp 176-178, 180

[Interview with Wendelin Wiedeking, Porsche CEO, by Stephan Schlotel and Dieter Schweer; place and date not given: "'Suffocated in the Jungle'—How CEO Wiedeking Plans To Energize the Weakened Sports Car Manufacturer"]

[Text]

[WIRTSCHAFTSWOCHE] Mr. Wiedeking, some 1,800 jobs will be cut at Porsche during the business year 1992/93. How is the shop to continue when one out of four workers goes?

[Wiedeking] First of all, Porsche AG is not a "shop," but a renowned sports car manufacturer.

[WIRTSCHAFTSWOCHE] You were that once. In the past years, the Porsche image became somewhat tarnished.

[Wiedeking] The automobile market has fallen worldwide, particularly the market for luxury cars and superior sports cars. At present, everyone has worries and excess capacities—the Europeans, the Americans, and even the Japanese. That is a fact, and car manufacturers worldwide must adjust to that. With regard to us: We are the first to have decided on such drastic cost measures. What we are doing now still lies ahead of others.

[WIRTSCHAFTSWOCHE] Listening to you, the crisis of the Porsche sports car manufacturer is due only to the market and not the constantly changing management.

[Wiedeking] It is primarily due to the market, no question about it. But with regard to exports, it is also due to the dramatically deteriorated exchange rate situation. For several years now, the dollar has no longer reflected purchasing power parity. And only recently, within the EMS [European Monetary System] we had to accept devaluations of the lira, the pound, and the peseta by about 20 percent. If we pass even part of that on to prices, the international competitive situation deteriorates. But it is also correct, and your question addresses this, that in the past we have not done all our homework. We probably rested on our laurels a little too long. But that is what we are working on now: We are restructuring the enterprise, optimizing the procedures, and becoming more efficient. Therefore it is obvious that we need fewer staff.

[WIRTSCHAFTSWOCHE] That sounds very nice, but is very general.

[Wiedeking] So, in concrete terms, during the last business year we have markedly increased productivity in the entire enterprise and cut about 700 jobs. In the current business year, we will cut back 1,850 jobs in the direct and indirect sectors. By 1995 we want to lower our overall costs by one-third. We have very clear ideas about what we want to change.

[WIRTSCHAFTSWOCHE] What specifically?

[Wiedeking] Up to now we had too much bureaucracy whereby many good starts suffocated somewhere in the jungle of hierarchies and departments. Now, for instance, in the areas of production and materials management, we will cut two out of six management levels, not to be replaced. That means we will need almost one-third fewer management personnel. In addition, individual manufacturing areas such as shell construction or assembly in the future will be managed as profit centers. Each of these units assumes total responsibility for production, planning, logistics and quality control. We will also expand the concept of profit centers to other areas.

[WIRTSCHAFTSWOCHE] Others in the automobile sector have also gotten that far.

[Wiedeking] Don't be too sure. Many master craftsmen at the production line already shiver if they are to raise their productivity by three percent a year. Our master craftsmen, by contrast, say we will manage 10 percent this year. Only as an example: In less than a year we have reduced the material under production by one-third; and we have managed to lower the purchase prices from our suppliers, despite declining numbers of items.

[WIRTSCHAFTSWOCHE] Do you demand of your suppliers a Porsche emergency levy?

[Wiedeking] We have searched with our suppliers for ways to optimize costs. In addition, in the future we will buy more parts as complete kits, so-called modules. It is the way all have to go, and we have already progressed very far. With about 20 percent, we have today the lowest vertical range of manufacture in the automotive sector.

[WIRTSCHAFTSWOCHE] So not much remains of the renowned Porsche car manufacturer except engine construction, the paint line, and final assembly.

[Wiedeking] Why this derogatory formulation? Lowering the vertical range of manufacture is generally considered the strategic key to ensuring competitiveness—and not only because the Japanese are showing us. But with regard to Porsche, to date we had a very low vertical range of manufacture and a high range of development. That means that we developed much too much on our own. The solution must be that the suppliers are included to a greater extent as systems suppliers. Our know-how and our strength do not consist of having the last screw on a Porsche developed by a Porsche engineer.

[WIRTSCHAFTSWOCHE] Of all places, in the Weissach Development Center one out of five staff members is to be dismissed. Yet Weissach is not only working on developing the urgently needed new models, but also on lucrative development orders from industry. Is Porsche's head being amputated now?

[Wiedeking] Perhaps you should be kind enough to grant us expert knowledge and assume that we do nothing to endanger the firm's existence. The opposite is true: The recessive global car market also hits our customers' research and development budgets. As a result, today we have substantially fewer outside orders than formerly. Furthermore, an increase in efficiency is possible not only among the production staff, but also among development engineers, if we flatten the hierarchies and speed up decisionmaking processes. We will simply work off our future model programs with fewer staff by creating better conditions for our engineers.

[WIRTSCHAFTSWOCHE] That sounds as if you were the first Porsche chief to do his job correctly.

[Wiedeking] I feel relatively free in my actions because I have no old burdens. Besides, I worked at Porsche once before for five years—from 1983-1988—and know the enterprise very well. After that, I went to a supplier, where I learned a great deal. Among suppliers namely, cost management has been a question of survival for years.

[WIRTSCHAFTSWOCHE] But you don't even have the title of board chairman, only that of spokesman of the board.

[Wiedeking] What do you mean, only? Under corporate law it has no relevance whatsoever. I see the board of directors as a team, and a spokesman who retains his own department is the proper signal for an enterprise going new ways. Thereby we want to clearly express the turnaround that must take place internally and externally.

[WIRTSCHAFTSWOCHE] You are confronted with a Herculean task. Sales and earnings are crumbling. There have been no earnings in the United States for a long time, and now hardly any in Europe. Does Porsche earn anything at all outside of interest and holdings?

[Wiedeking] This is not a news conference on the balance sheet. Only this much: In the past business year, sales and earnings declined and will do so this year, too.

[WIRTSCHAFTSWOCHE] Will there again be a dividend for the holders of ordinary shares of the Porsche and Piech families, and for the nonvoting preferred shares?

[Wiedeking] I do not want to comment on that here and now. That is decided by the supervisory board. My job is to prepare this enterprise for a worst-case scenario, that is to say, to adapt it to the changed market conditions. That is why we will cut back our capacities and massively lower our break-even point. If the economic climate should improve again some day, which no one expects during the next two years, we will perforce have longer delivery periods.

[WIRTSCHAFTSWOCHE] Within one year, Porsche has cut down its investments by one-fifth. Is that the way to ensure the future of a high-tech enterprise?

[Wiedeking] Yet meanwhile we have everything we need: A new paint shop, a new body plant, a wind tunnel—and everything we invested in buildings and installations is completely paid for. What is coming up now are investments in new models. And from that not a penny will be cut.

[WIRTSCHAFTSWOCHE] Merely the development of a new car costs up to a billion German marks [DM].

[Wiedeking] This enterprise has good material assets. We have no bank debts, and solid liquidity reserves.

[WIRTSCHAFTSWOCHE] Which are quickly eaten up. After all, you can hardly finance your investments from the constantly declining cash flow.

[Wiedeking] That is your hypothesis.

[WIRTSCHAFTSWOCHE] Convince us it isn't so. The DVFA [German Association for Financial Analysis and Investment Consultancy] result per share is getting dangerously close to the zero line.

[Wiedeking] Years ago, with fewer cars we once earned more money than today. We should be able to do that again, don't you think? I admit, it is most certainly not an easy task. But I am still at an age when it is possible to work with great intensity. Of course I could imagine more pleasant things than saying in a plant assembly that 1,850 personnel must leave the enterprise—and then implementing that announcement.

[WIRTSCHAFTSWOCHE] Morale is very low, and that does not motivate top performance.

[Wiedeking] To cut 1,850 jobs and still find supermotivation—you are really asking too much. On the other hand, we also have many staff members who realize that it cannot go on like that and who feel we are on the right road. Look at it from a positive angle: We do not want to cut one out of five jobs, but preserve four out of five.

[WIRTSCHAFTSWOCHE] Up to now you tried to persuade your staff members to leave voluntarily. But now Porsche plans mass dismissals. Do you already have a social benefit plan?

[Wiedeking] We are negotiating at present with the works council. Everything will depend on how many staff members we can persuade to quit voluntarily. So far we have been quite successful: 510 staff members have already accepted a revocation agreement.

[WIRTSCHAFTSWOCHE] After this personnel reduction, is that finally the end of personnel layoffs at Porsche?

[Wiedeking] Ultimately that is decided by the market. If in the future fewer car buyers want a Porsche, we will perforce have to part with additional personnel.

France: Matra's Ventures in Spain Reviewed

93WS0094T Paris LA LETTRE HEBDOMADAIRE DU GIFAS in English 1 Oct 92 pp 1-2

[Article: "MATRA: Cooperation With Spain"]

[Text] In the past several years, MATRA has considerably expanded industrial cooperation ventures with Spain:

Space

Cooperation has been in existence between MATRA and Spanish industry for the past 15 years. CASA, for example, supplies MATRA with the composite structure of the equipment compartment which is the brain of the Ariane space rocket built in Toulouse under prime contractorship of MATRA. In 1985, MATRA founded the CRISA Corporation (a co-equally held joint venture with the Spanish group ABENGOA) which has grown into Spain's second ranking space enterprise. CRISA employs 130 specialists and has reaped the advantages of large-scale technology transfer. The firm makes airborne electronic equipment carried by satellites, satellite software and test facilities for most major ESA programs. With CASA and SENER, CRISA is the third Spanish partner in the ARIANESPACE venture. MATRA MARCONI SPACE has also been chosen by the Spanish government to supply the Hispasat communications via satellite system. The contract is worth more than one billion francs and involves two satellites and the associated ground control and operation systems. The satellites have a ramp weight of 2 100 kg and minimum life spans of 10 years. The first one was delivered by MATRA MARCONI SPACE at the end of August 1992 and was orbited by the Ariane on 10 September. In this program, MATRA MARCONI SPACE, the prime contractor, works closely with Spanish industry, CASA, CRISA, TECHNOLOGICA, INISEL, CESELSA, etc. make more than 30 percent of the complete system. For the past 10 years a system of industrial compensation has been operating within the space field. CASA, CRISA, SENER and INISEL are also the major partners of MATRA MARCONI SPACE, prime contractor for the military reconnaissance satellite Hellos. Spain accounts for 7 percent of this program and will participate in the earth observation satellite Spot 4.

Defense

On 13 December 1991, the Spanish government approved with MATRA DEFENSE a contract for light Mistral anti-air missiles. The lead-off Spanish order is for around 200 firing stations—the portable version of the MANPADS—and several hundred missiles for a total of 15,000 pesetas (approximately 830 million francs). Starting in 1992 these missiles will be delivered to Spain's air force infantry and navy. The order is being handled under a close cooperation scheme involving MATRA DEFENSE and the Spanish enterprises SANTA BARBARA, INISEL, ICSA and ENOSA. Spain is the fifth European country collaborating in the Mistral program. The others are Belgium, Finland, Norway and Italy.

E5 - MATRA - 1 - 10 - 1992 - Contact: Mr. F. Aragon - Phone: 33 (1) 40 69 18 74

EAST-WEST RELATIONS

Riesenhuber in Russia To Discuss Science Cooperation

92WS0782A Duesseldorf HANDELSBLATT in German 10 Aug 92 p 5

[Article by bag: "German Support"]

[Text]

Research Cooperation/Riesenhuber in Moscow

The Federal Minister for Research and Technology, Heinz Riesenhuber (CDU) has been in Moscow since yesterday. He is sounding out the possibility of closer scientific cooperation with Russia. He wants to provide a total of 40 million German marks [DM] of support for science in the countries of the CIS this year and next. First, he wants to determine the quality of research in the various facilities, stated the Minister before his departure.

Riesenhuber will visit the capital of the Ukraine, Kiev, next. The scientific-technical cooperation with Russia and the Ukraine is to be expanded to include the areas of laser technology and materials research. In addition to these areas, there is nanotechnology, which concerns units even smaller than microtechnology, and marine biology. In Moscow, Riesenhuber is meeting with the Russian Science Minister Boris Saltykov, among others. From Moscow, Riesenhuber will travel to Petersburg and Kiev.

Central areas of German-Soviet cooperation until now were nuclear energy, space, agricultural science, and health research. These areas were based on an agreement concluded with Gorbachev in 1987.

Now, the former Soviet partners are prepared to open their previously heavily guarded military research facilities. This and the traditional Soviet-East German relationships opened numerous new possibilities. Although the conversion of armament plants to civilian production is the subject of heated discussion in Russia, no value is attached there to advice from the West.

Moscow even rejects a basic evaluation of the research agencies such as that in the new Federal Lands following unification. Riesenhuber believed he must restrict himself to providing information on German experiences. His urgent request to the Russians is, however, to support Germany in assessing the quality of the research facilities.

Mercedes-Benz, Kazakhstan Plan Joint Bus Venture in Alma Ata

93MI0011 Bonn DIE WELT in German 24 Sep 92 p 17

[Text] Mercedes-Benz in Stuttgart and the government of Kazakhstan in central Asia, which was part of the former Soviet Union, are planning a joint bus project, Kazakhstan president Nursultan Nazarbayev and Mercedes chairman Werner Niefer announced in Stuttgart on Wednesday. The intended location of the works, in which Mercedes buses will be assembled, is the capital Alma-Ata. Answering questions, Niefer said that there was already a feasibility study and even "more than one declaration of intent." Details were not forthcoming, though Nazarbayev said that the intention was to "start small."

The Kazakhstan president had held talks beforehand with Daimler-Benz chief Edzard Reuter, after which Nazarbayev told the press that his country was also interested in working with the Daimler-Benz technology group in the electronics and aerospace fields. He pointed out that the space station of the former Soviet Union was located in Kazakhstan. Nazarbayev said he was very pleased with the way the talks with the Daimler-Benz board had gone. They had looked on his plans "very favorably."

Daimler chief Reuter said that he agreed with Nazarbayev that production-sharing over a broad area was worthwhile. Apart from the automobile industry, Reuter saw "a number of other areas and interesting possibilities that we are convinced will help integrate Kazakhstan into the world economy." In July of this year, Mercedes-Benz chairman Niefer had held business meetings in Alma-Ata during a tour of various CIS countries. The Kazakhstan government proved to be particularly interested in purchasing used Mercedes passenger and commercial vehicles for long-distance transport and use on building sites, and in setting up a sales and service organization. Interest was also shown in the communications, electronics, and aerospace industries.

Poland: Thomson Polkolor Television Venture Assessed

93WS0033A Paris LE MONDE in French 2 Oct 92 p 16

[Article by Pierre-Angel Gay: "One Year After Creation of Thomson Polkolor, TCE Makes Poland Its Third Major Cathode-Ray Tube Production Facility Worldwide"]

[Text] *On Wednesday 30 September at Piaseczno on the outskirts of Warsaw, Mr. Janusz Lewandowski, Polish minister of ownership conversion (in charge of privatizations), celebrated "a felicitous privatization" (LE MONDE 24 May 1991). He recalled that in 1991, television-tube manufacturer Polkolor "was debt-ridden and had to cease production for lack of markets." Today, the Franco-Polish company Thomson Polkolor employs approximately 3,200 persons "at 50 percent higher pay than the national average."*

Warsaw—Last year, after refusing an initial offer by the Korean Samsung group, the Polish workers agreed to the takeover of their industrial complex by Thomson Consumer Electronics (TCE). By promising to invest $35 million (175 million French francs [Fr]), the French company obtained a 51 percent share of the capital; the Polish compay, as the other party to the agreement, retained the rest. To reach this agreement, of course, the complex was compelled to divest itself of many activities—health care, transportation, cleaning services—which then became independent companies facing perhaps a difficult future. But, as the minister pointed out with unusual candor during the celebration of the new venture's first anniversary, "the alternative was unemployment benefits."

After pleasant surprises—the high technical level of the personnel (further enhanced by a massive TCE training policy)—and less pleasant ones—the need to advance the repair of an oven at a cost of $5 million—the complex is now the group's third major cathode-ray tube production facility, alongside those of the United States and Italy. It produced 100,000 tubes last year (in six months). This year it will produce 100,000 tubes a month.

This powered climb can be expected to continue, inasmuch as, with attainment of all projected investments, the Piaseczno plant will be capable of producing up to 3 million tubes a year. To finance these investments, TCE is negotiating a $20 million loan with a consortium of Polish banks, and a second one with the EBRD [European Bank for Reconstruction and Development]. As of now, 80 percent of the tubes produced are being exported. Half of the production is being bought by the group's other units, the Polish plant being specialized in the manufacture of small-sized tubes, which TCE, heretofore totally absent from this niche, had been compelled to buy from its Korean competitors.

Helping TCE to power this climb is the lower level of labor costs. At Piaseczno, wages represent 15 percent of the price of a tube, versus 30 percent in Italy and the United States. The French group will nevertheless have to navigate very close to shore. First, because the Poles have just changed the rules of the game, eliminating, without warning, the customs-free importation privilege enjoyed by the group on components, 75 percent of which are imported. And secondly, because the market thus far has not grown as fast as TCE officials had hoped. "Should this continue," Mr. Alain Prestat, TCE's chief executive officer, acknowledges, "we may shortly face a temporary problem of overcapacity." In fact, shut out of Poland, Samsung has just taken over a plant in eastern Germany and is planning to set up production in Great Britain...

German SEL Installs Digital Telecommunications Network in Kazakhstan

93MI0084 Bonn DIE WELT in German 22 Oct 92 p 16

[Text] For Minister of Posts Christian Schwarz-Schilling, there is no doubt about it: "Efficient postal and telecommunications links are important for democracy and for building up modern economic structures," he commented after visiting Kazakhstan and the Ukraine.

At the moment, Kazakhstan's international telephone service uses a satellite link to Australia. According to the [German] Minister of Posts, there will be eight direct lines at the beginning of next year, subsequently to be increased to 40 direct links.

The Kazakh telecommunications authority has awarded SEL a contract worth about 500 million German marks [DM] to set up a modern, largely digital telecommunications network. As the equipment will be produced in the new federal laender, the project is covered by DM200 million in Hermes guarantees, said Schwarz-Schilling.

A new international exchange with 1,220 international channels (compared with today's 300) is already scheduled to enter service in the Ukraine in mid-November. Telekom, which had acquired much experience expanding the network in the new federal laender, was also the obvious choice to partner the Ukraine, said the Minister.

Telekom aimed to achieve an equal-status partnership in a joint venture with the American AT&T and wished to acquire a 19.5-percent stake. The Dutch post and telecommunications administration held 10 percent, and the Ukraine owned 51 percent of the joint enterprise.

Schwarz-Schilling said that, for Telekom the main thing was to have an equal share in foreign traffic and that it should be established which operator was to handle which region.

Western Supercomputer Companies Penetrating Eastern Europe

93WS0094G Edam SUPERCOMPUTER EUROPEAN WATCH in English Sep 92 pp 4-5

[Article: "Penetrating the East"]

[Text] Western supercomputer companies are slowly penetrating into Eastern Europe: Convex signed a contract with the ex-Yugoslavian republic of Slovenia; Cray has nearly finished negotiations with the University of Warsaw and a company in Prague has purchased an nCube system.

After years of Cold War trade restrictions when nothing more than a personal computer could legally be sold "over there," western supercomputer companies are slowly penetrating Eastern Europe. It is still difficult or impossible to get an export license for a Cray C90, for example, but, as the increasing numbers of examples prove, sales are possible. At least three (European branches of) U.S. companies have recently clinched sales to the East. Convex signed a contract with the ex-Yugoslavian republic of Slovenia; Cray has nearly finished negotiations with the University of Warsaw (or is pending U.S. government approval) and a company in Prague, Czechoslovakia, has purchased an nCube system.

The eastern European market shows many different characteristics. Most governments are too poor to splurge money on high-performance computing power; Russia, especially, is a slow market—cash is too scarce. Another draw-back seems to be that infrastructures are generally poor but, as Peter Wusten, general manager of nCube Europe, remarked; "after opening up to the West, UNIX-based workstations spread rather quickly. Because of the absence of old style main-frames, modern UNIX-servers ... are the ideal servers for this market."

Because of the Absence of Old Style Main-Frames, Modern UNIX-Servers are Ideal for This Market

The Slovenian contract is the first sale by Convex's recently established European multi-country region that focuses on southern and eastern European markets. Headed by Helmut Muhl-Kuhner, the region includes Italy, Greece, Turkey, Switzerland, the Middle East, Eastern Europe and the countries of the former Soviet Union. The Convex sales people are in a positive mood. Muhl-Kuhner sees three types of prospects. Eastern companies with Western partners who can probably afford to invest; western oil companies beginning to drill and operate in the East who want their usual equipment; and eastern civilian research institutes who have long coveted the machines. Convex is profitable in the East and aims at doubling sales this year and increasing them another 50 percent next year.

Convex is Profitable in the East

Little has been said about the Cray EL system delivery to the Warsaw University by Cray, DEC or the university itself. Cray, with machines far more powerful than export regulations permit, is more cautious about market prospects in the former eastern block. We will in this issue look at the other sales.

A Convex C3860 is to be Installed at the Jozef Stefan Institute in Ljubljana

C3s for Slovenia

Slovenia, one of the most politically stable and economically prosperous of all the former socialist countries of Eastern Europe, has awarded a three-year, multi-system contract to Convex. This contract provides for a Convex C3860 computer, purchased by the ministry of science and technology, to be installed at the Jozef Stefan Institute in Ljubljana. Convex will also deliver a C3220 to the University of Maribor. The systems will be used for increased computer research and development

efforts in science and technology for the newly independent country. The agreement also includes delivery of two additional Convex systems in the next two years.

According to Peter Tancig, Slovenia's minister of science and technology, the Convex computers will provide essential research and development support for the republic's existing technologies and future endeavors. "The systems will be used to support a wide area of research and development activities throughout the country such as computer-aided engineering for automotive parts, design and manufacturing, computational chemistry applications for pharmaceutical companies and industrial chemicals studies, and environmental applications for the design of water turbines," he continued. "In addition to the research being done for industrial purposes, the Convex systems will be used for advanced research by scientists in theoretical and high-energy physics, computational chemistry, molecular biology. Image processing, and environmental modeling."

The Advent of Minisupercomputers was Essential to the Development of Our Local High-Performance Computing Capabilities

The C3860 to be installed at the Jozef Stefan Institute, pending export license approval, is an upgrade from a Convex C220 system that was installed in 1989. "The advent of minisupercomputers was essential to the development of our local high-performance computing capabilities," said Vladimir Alkalaj, the head of the computer center at the Jozef Stefan Institute. "With the acquisition of the first Convex system, our scientists gained locally available and affordable computational resources for computer-supported research and development."

The C3220, which will be installed at the University of Maribor, will be used exclusively by students and scientists of the university for educational and basic research purposes.

APP Systems in Prague Has Purchased an nCube 2

nCube for Prague

APP Systems in Prague, Czechoslovakia, has purchased an nCube 2, APP Systems, founded in July 1990. Is the Oracle distributor and the leading Czechoslovakian systems integrator with more than 300 employees. APP Systems brought to the Czechoslovakian market many new products, e.g. Oracle, and have now decided to make nCube's massively parallel computers available to Czechoslovakian computer users. The system will be used to support APP Systems' activities in large data processing projects. The computer to be installed is a 16-processor nCube 2 system, with 256 Mbyte of memory.

Our Great Challenge is To Make MPP Machines Available to Commercial Environments

Mr. Mika, executive vice president of APP Systems, stated: "APP Systems provides its customers with a wide variety of services, such as analysis and study, system and project design, delivery and installation of necessary computer hardware and software. Our great challenge is to make MPP machines available to commercial environments, because they offer an exceptional price/performance relation to a wide range of applications. With the nCube MPP supercomputer running Oracle's parallel server technology, I believe we have found the optimal server for the high-end client/server solutions and we are happy to have an opportunity to work with the latest and the most powerful hardware technology."

Swedish Ericsson To Supply Mobile Phone System to Romania

93WS0094L Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 12 Oct 92 p 4

[Article: "Romania: Ericsson To Supply Mobile Phone System"]

[Text] Telefonica-Romania, the joint-venture company licensed last February to set up cellular networks for Romania (see ITI issues 328 & 334), has placed a contract with Ericsson to supply an NMT-450 mobile telephone system for Bucharest and surrounding areas. The system will initially have a capacity of 3,000 subscribers and will enter commercial operation during the first quarter of 1993.

The project will be carried out on a turnkey basis with Ericsson Radio Systems AB in Sweden having technical responsibility for the contract and Ericsson Fatme SpA providing marketing services.

Utilisation of the NMT-450 standard makes it possible for Telefonica-Romania to arrange roaming agreements with the Scandinavian countries, the Baltic States and the CIS.

Telefonica-Romania, owned by Telefonica international and ROM Telecom, has plans to expand its cellular networks to operate in the 900MHz sector.

EUROPE-ASIA RELATIONS

Daimler-Benz Buys Part Interest in Sangyong Motors

93WS0017B Duesseldorf HANDELSBLATT in German 5 Oct 92 p 13

["German-Korean Automobile Project"]

[Text] Handelsblatt, 3-4 October 1992 ga/dpa/vwd Tokio/Stuttgart— Daimler Benz AG, advanced technology company in Stuttgart, now has a five percent share in its previously licensed Korean partner Sangyong Motor Co., Seoul, Korea. As Mercedes Benz chief executive officer Werner Niefer explained, the official agreements have now been submitted to the Korean authorities for approval.

This action represents the first financial participation of a European automobile producer in a South Korean automobile industry concern. Sangyong Motor Company is the fourth largest South Korean automobile producer. In late January 1991, Mercedes Benz AG entered into a cooperative venture with Sangyong, according to which the South Korean company would produce on license about 50,000 light Mercedes Benz transporters (MB 100) with two diesel engines yearly, commencing in 1994.

Furthermore, the German side is attempting to exercise a stronger influence on the business of the Korean company in general. To this end, a German top manager, enjoying the rank of an executive vice president, is to be assigned to the Korean company.

It is expected that Sangyong Motor will take over local production, including the engines, and component assembly of Daimler-Benz models 190, 200, and 230 for the Korean market. Production will begin with 250 units this year, and expand to 1,000 units by 1994.

Finally, the agreement calls for close cooperation between the South Korean producer and the German side to produce and market locally a new vehicle, to be called the Sangyong, based on Mercedes Benz technology, by 1996.

France's Thomson, Japan's Sanyo Unveil TV Chip

93WS0020C Paris AFP SCIENCES in French 17 Sep 92 pp 13-14

[Unattributed article: "TV Set Assembly: 'Revolutionary' Chip Developed by Sanyo and Thomson"]

[Text] Tokyo—On 16 September, the Japanese company Sanyo Electric announced that it had developed a revolutionary new chip jointly with Thomson Consumer Electronics (TCE), the consumer electronics branch of the nationalized French group Thomson; the new chip will simplify the assembly of color televisions and significantly reduce production costs.

This very-large-scale integrated (VLSI) circuit can perform functions that are now done by man, e.g. adjusting picture colors and brightness on television sets, as well as frame and line synchronization. "These adjustments, which are now done by hand at the factory, can be completely eliminated thanks to a computerized system, the software of which can be changed very easily to reflect any new technical characteristic," Sanyo indicated.

According to Sanyo officials, this chip, the production of which started last month, will be reserved exclusively for both the French and Japanese companies until June 1993. After that date, it will be made available to other television set manufacturers.

Production is expected to reach 500,000 units per month by the end of next year. The price should be around ¥3,000 (12,000 French francs [Fr]) per chip. For the moment, the chip is compatible only with the NTSC [National Television System Committee] television standard used mostly in America and in certain Asian countries, such as Japan, South Korea, and Taiwan.

"We are studying a similar chip compatible with other systems," Sanyo LSI [large-scale integration] department manager, Mr. Junji Sakamoto, indicated. However, he added, the PAL system used for TV sets in Europe and certain areas of Asia will require more complex circuitry.

TCE, one of the leading color-television manufacturers worldwide, makes TV sets in the North-American market under the RCA brand; Sanyo sets are manufactured under Sanyo's own name and under the Fisher brand name.

Japanese Auto Production in Europe Surges

93GE0065A Munich SUEDDEUTSCHE ZEITUNG in German 4 Nov 92 p 22

[Article by Gerhard Blaske: "Japanese Undermining Fortress Europe: Auto Manufacturers' High-Pressure Expansion of Production Capacities"—first paragraph is SUEDDEUTSCHE ZEITUNG introduction]

[Text] Munich, 3 Nov—Almost all Japanese auto manufacturers are now rapidly developing production capacities in Europe. The import restriction for Nippon's vehicles in the domestic market through 1999 is not the only reason for this. It has long been part of the strategy of the Far Eastern automotive concerns also to set up production facilities where the automobiles are to be sold. They have already demonstrated that in the United States and have thereby driven the U.S. manufacturers into a very severe crisis. Europe's producers also fear a murderous competitive fight and are striving in many ways to increase their productivity.

The European auto manufacturers want to take advantage of the transition period through 1999. The import agreement negotiated last year between the EC and Japan provides, namely, that to protect the European automobile industry the importation of Japanese vehicles into the EC will be limited to a maximum of 1.23 million cars—depending on market developments—per year through 1999. The number of vehicles produced in Europe by Nippon's auto manufacturers was not set forth in writing. But the number of cars manufactured there is not supposed to exceed 1.2 million units and the market share of Japanese offerers—presently between 10 and 11 percent—should not go over 16 percent.

Sales Hindered

Because of the weak demand in many countries, however, the import quota has already been corrected downward. According to an estimate by Andreas Meckel, representative of the Japan Automobile Manufacturers Association (JAMA) in Germany, about 30 percent of the potential demand for Japanese automobiles in the

FRG could not be satisfied in 1991. Under the pressure of the agreement, therefore, all manufacturers were intensively examining the possibilities of being able to produce in Europe. Here they are still far from the allowed quota of 1.2 million vehicles a year.

Nissan has already been producing the cross-country vehicle "Patrol" in Spain since 1983. The opening of the plant in Sunderland, England followed in 1986. Meanwhile, the capacities in this plant, highly praised on account of its high productivity, have been expanded considerably. After total investments of DM2.7 billion, 270,000 "Primera" and "Micra" cars are to be built in 1993 by 4,600 employees. According to Nissan, the capacity of the manufacturing site in Spain, where a new cross-country vehicle is to come off the assembly line, will be increased to 104,000 units in 1993.

Others have followed. The Honda concern, which in England has already produced motors for the British Rover Group and for the "Concerto" manufactured at Rover, will continue to expand this plant through 1995. In addition, a plant for passenger cars was completed in Swindon, England in October. By 1995, 100,000 autos are to be produced here annually. Honda indicates that the total investments amount to more than DM1 billion. A joint plant of Volvo and Mitsubishi is supposed to go into operation in 1995. Beginning in February 1993, Daihatsu will produce the small transport vehicle "Hijet" in Pisa. Suzuki will produce 50,000 units of the model "Swift" annually in Hungary after the end of this year. Finally, Toyota is investing more than DM2.4 billion in two plants in Great Britain. In Deeside in Wales, 200,000 motors are to come off the assembly line every year and the "Carina" will be produced in Burnaston in England. Annual production is to reach about 200,000 vehicles by 1995. Besides that, there are approximately 12,000 Toyota Hilux (or Volkswagen Taro) transport vehicles manufactured jointly with Volkswagen in Hannover.

Omissions

The Japanese are thereby repeating what they have already done in the United States, where they put up an entire series of plants and have now achieved a market share of about 30 percent. In view of the catastrophic position of the U.S. producers, many European manufacturers are lamenting the construction of these plants in previously well-insulated Europe. The EC even wants to make support money available to the generally quite profitable branch, which is supposed to help Europe's manufacturers adapt to the Japanese producers.

The Japanese counter by saying that protectionism has seldom strengthened competitiveness. They point out that the Japanese successes are also the "mirror image of European omissions." Nissan and company are also defending themselves against accusations that the cars produced in Europe by Japanese enterprises are ultimately Japanese. After all, they say, Opel and Ford, subsidiaries of U.S. manufacturers, are also considered European, whereas a Nissan produced in Great Britain is not.

Nissan argues that the European share in the manufacturing of the "Primera," for example, is now above 80 percent. They say that suppliers profit greatly from this. Nissan claims that it has 177 European suppliers and Honda indicates 138. The ordering of parts from EC suppliers is supposed to reach a volume of DM1.8 billion for Nissan and DM2 billion for Toyota. Suppliers such as Bosch are even settling in Great Britain already. And increasingly Japanese manufacturers such as Nissan, Mitsubishi, Mazda, Honda, and Toyota are having their vehicles partially developed in their European development centers.

New Considerations

Meckel expects the total capacity of the manufacturing sites of Japanese producers in Europe to increase to 1-1.1 million units by 1999. In view of the crisis that Nippon's producers have now entered and the present declining market volume in Western Europe, however, many investment decisions will be made more cautiously. Thus, depending upon the development of the market, Toyota, for example, is considering stretching the second expansion phase of its projects somewhat. Mazda, which is negotiating on a joint plant with its co-owner Ford (24.5 percent), considers the building of a European plant to be risky at this time. In the case of small vehicles, the Japanese are getting more and more competition from Korea. In the upper market segment, however, prestige still plays an important role. Just a few days ago, Mazda stopped the project for the luxury car Amati.

In the opinion of experts, to be sure, eventual growth of the European market will benefit the Japanese above all. At the present time, however, so much new capacity is coming into being—in Portugal and eastern Germany, for example—that it may be that be no means all of the blossoming dreams will come to fruition. The competition in Europe will certainly be murderous.

Samsung's Purchase of Eastern German TV Factory Improves Local Suppliers' Prospects

93MI0069 Bonn DIE WELT in German 16 Oct 92 p 15

[Text] The Trust Agency board has approved the sale of the Television Electronics Factory GmbH (WF) in Berlin to the South Korean electronics company, Samsung. The Trust Agency stated on Thursday in Berlin that the way is now clear for the takeover of WF by the end of the year.

In the deed of sale signed at the beginning of September, Samsung undertakes to guarantee 800 of the 1,200 WF jobs in the first instance, and to bring the number back up to approximately 1,000 after 1997. In addition, Samsung intends to invest 134 million German marks [DM] in the factory, which is located in the Oberschoeneweide district of Berlin. Samsung is the first South Korean firm to acquire a Trust Agency company.

The Trust Agency states that the privatization will also increase the chances of survival of WF's major suppliers, such as Tschernitz Television Glass, with 653 employees, or Mittweida Electro-Precision Mechanics GmbH (Elfema), with 265. Samsung has reportdedly also expressed an interest in principle in purchasing both television manufacturer RFT, Stassfurt, and Elfema.

According to the Trust Agency, it had offered the company to all the 32 major television and color picture tube manufacturers in the world. Apart from Samsung, the Finnish company Nokia and the Turkish Bekoteknik had also expressed an interest in WF.

Sony To Introduce Mobile Phone for UK Consumer

93WS0094M Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 12 Oct 92 p 5

[Article: "Sony To Launch Mobile Phone for Consumers"]

[Text] The first mobile phone designed specifically for the general consumer is to be unveiled this month by Sony. The new phone will operate with Cellnet's Lifetime initiative aimed at the general consumer.

To be widely distributed by authorised Sony dealers, the CMH333 will be priced at £299. It will have a battery life of up to 90 minutes talk time with 24 hours stand-by time and will have an optional hands-free kit for use in the car.

The new phone, which Sony claims is one of the most compact mobile phones on the market giving the size of a Mars Bar as a comparison, is to be made available in November.

Cellnet's aim of mobile phones for everyone is the result of a two-year research project that identified a potential market of up to 10 million users. Lifetime is tailored to the needs of occasional users. It halves the cost of connection to the Cellnet network and makes mobile phones affordable for domestic users.